

# **Extra Financial Analysis – EFA: Environmental and financial performances of ABB, Akzo-Nobel and SCA: Picturing the business opportunities and risks associated to stakeholder perceptions and environmental and social prerequisites**

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<p><b>Title and subtitle of the report</b></p> <p>Extra Financial Analysis – EFA: Environmental and financial performances of ABB, Akzo-Nobel and SCA. Picturing the business opportunities and risks associated to stakeholder perceptions and environmental and social prerequisites</p>	
<p><b>Summary</b></p> <p>External assessment of companies’ environmental aspects often focus on the existence of strategies, commitments, management systems and reporting of firms that concerns environmental aspects. Instead, in line with extra financial analysis, in order to play a role in decision-making, analysis of environmental aspects should incorporate the influence that stakeholders may have on future revenues of the assessed firm and how well advanced corporate strategies are in meeting these threats, turning them into business opportunities. Thereafter, the environmental information financial analysts’ use in their financial analyst reports as well as the relation between environmental and financial performance are illuminated. Three industry sectors, <i>Chemicals</i>, <i>Electrical Equipment</i> and <i>Paper &amp; Forest Products</i>, are specially analysed in this report.</p> <p>Out of almost 4500 analyst reports about 36 percent contain environmental information, but when looking at industry sectors these numbers range from only 3 to up to 79 percent. The type of environmental information that the analysts focus on in their reports are on how firms’ products and product portfolios are adopted to <i>Environmental regulations facing customers/ markets</i>, <i>Customer demands</i> and <i>Eco-Efficiency</i>. This product perspective is strongly related to discussions of business opportunities of the firm. In fact, a good 77 % of the financial analyst reports containing environmental information dealt with opportunities linked to environmental aspects. To a lower extent, financial analysts write about company specific risk issues like emissions and litigations while their reports is virtually absent from aspects like environmental strategies, policies, management systems, reporting and auditing.</p> <p>The correlation between corporate financial and environmental performances is illuminated through regression analyses. Industry environmental risk is found to be negatively correlated to corporate return on assets – ROA – (in an static model) while (when applying a dynamic model) corporate environmental performance and ROA have a positive correlation in the short term, which can find support by other studies using different data.</p>	
<p><b>Keyword</b></p> <p>Extra financial analysis, EFA; Financial analyst reports; Content analysis; ESG Framework; Return on assets, ROA; Environmental, social and financial performance; Financial accounting, Non-financial information</p>	
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## Abstract

Traditionally, external assessment of companies' environmental performance is seldom dealt with, but evaluations subsists focusing on the existence of strategies, commitments, management systems and reporting of firms that concerns environmental aspects. The environmental performance that actually gets analysed foremost concerns substance flows and in some cases the resulting environmental cost assessment. These performed cost assessments will, however, in most industry sectors not influence major firm decisions, especially if these costs assessed are to illustrate the *true* costs for society and not the costs that may face the firm. Instead, in order to play an role in decision-making, analysis of environmental aspects should incorporate the influence that stakeholders – such as customers, NGO's and legislators – may have on future revenues of the assessed firm in the near by future and how well advanced corporate strategies are in meeting these threats – through research and market plans – to turn them into business opportunities. An appraisal of top management's strategic understanding of these aspects is, thus, imperative.

Some obstacles for making assessments of firms – strict financial or environmental – from the outside and in are A) the information asymmetries and the resulting deficient knowledge among external actors, B) the lack of data also internally within the firm as well as a picture over the linkage between environmental aspects and financial outcomes. This research report, hence, deals with the concept of extra financial analysis and, then, investigates what environmental information financial analysts use in their financial analyst reports as well as the relation between environmental and financial performance. Three industry sectors, *Chemicals*, *Electronics* and *Paper & Forest Products*, are specially analysed in this report.

### Environmental Information in Financial Analyst Reports

Unlike most previous research that merely looks at the perceptions of analysts, this report examines the environmental information financial analysts actually use in their analyst reports. Out of almost 4,500 analyst reports about 36 percent contain environmental information, but when looking at industry sectors these numbers range from only 3 to up to 79 percent. The type of environmental information that the analysts foremost focus on in their reports are on how firms' products and product portfolios are adopted to *Environmental regulations facing customers/markets*, *Customer demands* and *Eco-Efficiency*. This product perspective is strongly related to discussions of business opportunities of the firm. In fact, a good 77 % of the financial analyst reports containing environmental information dealt with opportunities linked to environmental aspects. To a lower extent, financial analysts write about company specific risk issues like emissions and litigation while the analyst reports practically lacks aspects like environmental strategies, policies, management systems, reporting and auditing. Aspects that constitute a prominent part in many assessments used by environmentally concerned investors.

### Corporate Financial and Environmental Performances

Environmental aspects at the industry level have been shown to be highly correlated with the industry's financial performance at least in the short run. Since environmental performance, environmental preparedness as well as the levels of industry risk may have long-run effects dynamic models are used to capture the temporal aspects of the performances and risks where the dependant variable is the return on assets. In order to study whether the correlations are general, industry or company specific short run and long run elasticities are estimated for each of these. The results show a high correlation between the covariates where the signs are dependant on whether the independent variable is a performance or a risk level. The models indicate that industry risk is negatively correlated with return on assets (ROA) and corporate environmental performance positively correlated to ROA in the short term.



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# **1 Introduction**

There is an ongoing and expanding global trend to include a larger set of aspects into the investments – other than merely short-term financial – that also a more holistic picture of the invested company's contribution to the wellbeing of its stakeholders in society. Those investments are often denominated ethical, socially responsible or sustainable. In Europe the trend has been more focused on the impact of the firm's operations upon others. To be competitive in the North America financial market the focus, however, has to be less altruistic and provide a more long-term picture on the economic prosperity of the firm other than the mainstream financial snapshot. Such an assessment includes how dependent company revenues are on sensitive industry sector environmental and social aspects that may affect the future market shares and revenues of the firm. The impact on the firm from these conditions may be through stakeholder perspectives on what is ethical and acceptable or merely by the scarcities of vital resources.

This dependency assessment includes two components one negative side on sector related risks and future costs of company operations and one positive side on competitiveness of the firm compared to its sector competitors. These assessments that include aspects which the ordinary financial assessment oversees, but are aspects that determine the future prosperity of the firm, may be referred to as Extra Financial Analysis (EFA). The inclusion of such aspects – like environmental and social resources – in the analysis of the firm is increasingly gaining terrain in institutional investments like major pension funds which affects the firm's access to another vital resource, namely capital.

The EFA in the financial community is an outside-in assessment of the strategic relevance of environmental and social aspects for the company's future prosperity that will influence the amount of capital invested into the firm. A problem for these actors and all actors outside the analysed firms is to decide which information could be relevant and then, the perhaps even more difficult, to find this information. Sometimes, actors tend to settle with information that is retrievable rather than some other criteria.

The mainstream financial community, in general, the mainstream financial analysts, more specifically, are oftentimes in literature seen reluctant towards corporate issues like corporate handling of environmental and social aspects. This report investigates the actual inclusion of environmental aspects into the financial analyst reports in order to detect which information on extra financial aspects that is actually used by mainstream actors in the investment value chain. Furthermore, this report investigates the value relevance of corporate environmental and social aspects to firm financial performances

There is, hence, relevant for the firm to understand the characteristics of this analysis method that is currently budding. If such understanding is achieved improved communication can be attained with the financial analysts, but also if drawing from experiences of other strategic environmental assessment tools the EFA may become beneficial as an internal tool, providing information for the firm's strategic decision making process.



## **2 Project aim and scope**

The aim of this report on extra financial analysis is to A) provide an understanding on how financial assessments of firms may include firm revenue dependencies to sensitive industry sector environmental and social aspects, potentially affecting the future market shares and revenues of the firm, B) reveal to what extent and how the mainstream financial analysts incorporate environmental aspects into their financial analyst reports dedicated to the investors and fund managers as well as to C) study the correlation between environmental aspects and the short run financial performance.

## **3 Organisations and people involved in the project**

### **3.1 Organisations Involved in the Research Project**

This study is the result of collaboration between the industry-university competence centre environmental assessments of products at Chalmers University of Technology in Gothenburg (CPM) including its member companies, IVL Swedish Environmental Research Institute and the research group Sustainable Investment Research Platform (SIRP) that is hosted by Umeå School of Business (USBE), but encompasses academic researchers from all over Europe.

#### **CPM at Chalmers University of Technology**

This study has been headed by CPM, the Competence Centre for Environmental Assessment of Product and Material Systems. CPM is hosted at Chalmers University of Technology in Gothenburg and was established in 1996. The study and its deliverables constitute a part of the fifth stage of CPM as of 2007-2009. A short description of CPM is provided in [www.cpm.chalmers.se](http://www.cpm.chalmers.se).

CPM has been established and carried on in agreement between these parties:

- The current industrial partners: ABB AB, Akzo Nobel AB, Bombardier Transportation, Duni AB, IIT Flygt AB, IKEA of Sweden, SCA Hygiene Products, Tetra Pak, SKF, Stora Enso AB and Volvo Technology AB.
- VINNOVA, the Swedish Agency for Innovation Systems.
- Chalmers University of Technology.
- IVL Swedish Environmental Research Institute.

The overall goals for CPM are:

- The eradication or reduction of the environmental impact associated with products.
- To become competent in the development of eco-efficient and sustainable products at a high international level.
- To provide industry and society with the relevant methods and support to facilitate decision-making with regard to the environmental aspects of products and materials.

CPM is now in the process to enter into the sixth stage. The study was carried out as a part of CPM's fifth stage. The overall goals for stage five are:

- To understand how companies should integrate and develop their current knowledge in the businesses of interested parties, so that it supports environmentally, socially and economically sustainable development.
- To provide knowledge and tools that leads the way towards sustainable development in business management, product and process development and marketing communication.

#### **IVL Swedish Environmental Research Institute**

IVL, Swedish Environmental Research Institute, is an independent research organisation, operated as a limited not-for-profit company, supported and governed by the government (Ministry of Sustainable Development) and Swedish industry. The goal is, in agreement with authorities and industry, to create scientifically based decision-making information for a sustainable society. Through a half-century of scholarship, IVL has built a reputation for reasoned analysis on important problems and for developing innovative solutions to environmental challenges.

#### **Sustainable Investment Research Platform – SIRP**

The Sustainable Investment Research Platform – [www.sirp.se](http://www.sirp.se) – is a European wide research collaboration that is hosted by Umeå School of Business and the program's main financier is the Mistra Foundation for Strategic Environmental Research. The program has in 2009 entered its second phase and the purpose is to reach a conceptual clarification and an operational definition of SI in relation to sustainable development. Based on more stringent definitions, the profitability of SD practices at the company level as well as that of adhering to a more restrictive set of sustainable investment rules at the investor level will be investigated in the research program.

#### **Extra Financial Analysis Cases Initiated as of 2007:Q2**

Three Extra Financial Analysis cases have been initiated during the second quarter of 2007, constituting a part of the 5th stage of the CPM competence centre's activities running throughout 2007 and 2009. There is one company for each and one of the three case studies that is involved and committed to the specific research tasks. Each project is carried out in collaboration between researchers from IVL Swedish Environmental Research Institute, Chalmers University of Technology, Umeå School of Business as well as researchers and managers from the engaged companies. The three case studies are based on and carried out with ABB, Akzo Nobel and SCA.

The ABB case was initially focusing on one important product system, its High Voltage Direct Current (HVDC) system, but the project has now been steered towards looking at the entire corporation instead. Now, the scope of study for all three companies – ABB, Akzo Nobel and SCA – concerns the entire corporations. The study looks at how the corporations' environmental matters are analysed by financial analysts. The study assesses the risks and the strategic opportunities linked to environmental issues and the expanding global market. Then, the correlations between environmental aspects and financial outcomes are assessed.

## **3.2 People Involved in the Research Project**

The research project idea was launched and outlined at a CPM meeting during September 2006. Thereafter, the project started off with a 2-day kick-off workshop May 7-8 2007 at Chalmers University of Technology that included speakers and participants from industry, analyst firms specialised on Socially Responsible Investments (SRI) as well as researchers from academia. Project leader for the undertaking has been Pontus Cerin, initially working at IVL Swedish Environmental Research Institute and currently at Umeå School of Business, in close collaboration with

Mohammed Belhaj, IVL Swedish Environmental Research Institute, specialist on econometrics and linkages between environmental and financial aspects.

Other researchers that have been involved are Henrik Nilsson, Umeå School of Business who has lead the work with searching through the almost 4,500 research reports from the financial analysts available at the database Investtext as well as Lars Hassel, Umeå School of Business, who has provided data on the environmental preparedness and performance of firms from GES Investment Services.

During the project numerous and indeed valuable meetings have been held with ABB (foremost Curt Henricson and Lennart Swanström), Akzo Nobel (foremost Klas Hallberg and Kjerstin Ludvig) and SCA (foremost Ellen Riise and Björn Spak) to analyse the environmental aspects that are financially material in their respective industry sectors as well as their experiences and views on how and how well the financial sector assess them regarding environmental aspects. Continuously and likewise valuable meetings have been held with the CPM member companies and associated academic institutions as well as with the Board of CPM during phase 5 and the entire project period, encompassing both presentations and following in-depth discussions.

The IVL Swedish Environmental Research Institute Research Director Lars-Gunnar Lindfors has provided support to this research project. He has conducted several research initiatives looking for roads on how to implement environmental management in industry and authorities' aim for making Swedish environmental legislation more efficient for industry. His initiatives on the environmental management side has lead to the creation of simplified methods of working with guidelines focusing more on performance improvements than on documentation procedures.

## **4 What is Extra Financial Analysis?**

Extra Financial Analysis (EFA) in the financial community may be seen as an outside-in assessment of the strategic relevance of environmental and social aspects for the company's future prosperity that will influence the amount of capital invested into the firm. The main issue with EFA is not to determine how the company affects the environment. This is not a primary interest of the financial analyst but to analyse how the company's environmental management of affects its future profitability and market shares.

There are for most definitions on handling environmental and social concerns – whether it concerns corporate management tools for these aspects or the holistic all encompassing sustainable development agenda – numerous definitions. If one 'googles' some of these terms like sustainability, sustainable development, corporate social responsibility, ethical investment, socially responsible investment and so forth the number of definitions for each of them bunching back will be overwhelming. Despite these apparent obstacles of consensus within the field of corporate responsibility and investments we make an effort in this section to define a concept that deals with these aspects – or rather to increase the understanding of the concept. The concept is Extra Financial Analysis – EFA.

The prominent ethical investment advisor organisation, EIRIS (2008), for example, provides its view on what ethical and socially responsible investments are and it concludes with an interchangeable usage of the terms:

“Ethical or socially responsible investment (as well as responsible and sustainable investment) are terms used to describe any area of the financial sector where the social, environmental and ethical principles of the investor (whether an individual or institution) influence which organisation or venture they choose to place their money with. It also encompasses how an investor might use their power as a shareholder to encourage better environmental and social behaviour from the companies they invest in.”

(EIRIS, 2008)

In EIRIS discussion on ethical and socially responsible investments they, furthermore, state that ‘ethically responsible investments’ and ‘socially responsible investments’ are terms that they use “...not just to refer to screening equities for investment but also to describe engagement with companies, banking, investment in debt instruments and ‘cause-based investments’ in enterprises with social, environmental or Editorial 169 ethical objectives”.

Just recently, however, some actors have started to use the term extra financial research as well as investments like Innovest strategic Value Advisors (Now a part of RiskMetrics Group), based in USA. The United Nation’s Environmental Program’s Financial Initiative web contains a rather broad definition of “extra-financial” analysis by BNP Paribas online on their website since 2004 (BNP Paribas, 2004) and it goes as follows:



Figure 1: An attempt to define “extra-financial” analysis by BNP Paribas at the UN EP Financial Initiative (UNEP FI, 2004)

In 2005 PricewaterhouseCoopers (Hummels and Wood, 2005) publish a report that assess the financial analysts’ use of social, ethical and environmental aspects as well as the linkages to costs and value of these issues. The report states that financial analysts take extra financial issues into account like quality of management and strategy of innovations, while their industry and company reports rarely contain environmental, social or ethical aspects and this despite the increasing interest in such aspects among investors. This gap in Environmental, Social and Governance (ESG) issues between sell-side analysts and a somewhat higher interest among investment managers is, also, detected in a large survey-based study by European Centre for Corporate Engagement (Bauer, 2008). The PricewaterhouseCoopers (Hummels and Wood, 2005) report, moreover, discusses the role non-financial information can play in understanding the company’s future cash-flows and profits. There, in that description of non-financial information, environmental and social aspects constitute a part for analysts to consider:

“To the extent necessary for an understanding of the company’s development, performance and position, the analysis shall include both financial and, where appropriate, nonfinancial key performance indicators relevant to the particular business, including information relating to environmental and employee matters.”

(Hummels and Wood, 2005)

The notion of non-financial information, thus, encompasses environmental and social issues, but the PricewaterhouseCoopers (Hummels and Wood, 2005) report, furthermore, makes a different inclusion of aspects into the extra-financial information, where environmental and social aspects are not included, as shown in Table 1.

Table 1: is an overview by PriceWaterhouseCoopers (Hummels and Wood, 2005) for financial analysts on the categories of information for illuminating the price but also value of social, ethical and environmental information.

Financial information	Extra-financial information	Social, ethical and environmental information
<b>Balance sheet information</b> Liabilities Assets Shareholder equity  <b>Profit &amp; loss information</b> Revenue Earnings Before Income Tax Depreciation and Amortization (EBITDA) Operating profits Net Profit After Taxes (NAPT)  <b>Cash flow information</b> Operating revenue Investing cash flows Financing cash flows Net cash change  <b>Stock information and ratios</b> Market capitalization Earnings per share Economic Value/EBITDA Dividend Yield Discounted Cash Flow Valuation Economic Value Added	<b>Quality of management</b> Quality of corporate strategy Execution of corporate strategy Management experience Management credibility Risk Management  <b>Strength market position</b> Market share Market growth Brand image  <b>Strength of corporate culture</b> Attract and retain talented people Quality workforce  <b>Quality products and services</b> Quality of major business processes Product liabilities Product innovation Process innovation  <b>Level of customer satisfaction</b> Customer penetration Customer satisfaction Sales growth  <b>Governance</b> Corporate Governance Structure Regulatory interventions	<b>Ethical information</b> Values statement Code of conduct Ethics training Ethics office Human rights violations Corruption Discrimination  <b>Social information</b> Employee health & safety Education and training Diversity Employee turnover Team work Working conditions Employee participation  <b>Environmental information</b> Greenhouse gas emissions NOx, SOx emissions Use of energy and water Use of materials Discharges to water, air, soil Amount of waste Environmental impact of products and services

The report by PricewaterhouseCoopers (Hummels and Wood, 2005) which is a well written study, hence, uses both the terms non-financial information and extra-financial information which goes as follows (in general, but the concepts are varying throughout the report):

- Non-financial information includes both:
  - Extra-financial information – that encompasses aspects like Quality management, Strength market position, Strength of corporate culture, Quality products and services, Level of customer satisfaction and Governance – and
  - Social, Ethical and Environmental Information.

In PricewaterhouseCooper's (Humels and Wood, 2005) report both Extra-financial information and Social, Ethical and Environmental information a subset of Non-financial information, but not of each other. This division between Extra-financial, on the one hand, and Social, Ethical and Environmental, on the other, is, however, not congruent with the description made by BNP Paribas at the UN EP Financial Initiative (BNP Paribas, 2004). Enhanced Analytics Initiative (EAI) has, furthermore, a classification where *"The EAI considers ESG to include extra-financial issues that it describes as fundamentals having the potential to impact a company's financial performance or reputation in a material way."* (Kropp, 2008). These somewhat different views are a natural outcome, as described by Thomson Extel and UKSIF (2008), of the early stage of an industry in transition that these aspects constitute in the financial sector. See e.g. Utterback's (1996) hallmark descriptions on the diverting fluid-phases in early stages of development of new technologies and ideas.

One example on how an actor has attempted to differentiate the terms 'socially responsible investments' (SRI in the quotation) and extra-financial research can be retrieved in the Thomson Extel and UKSIF (2006) survey. According to them, the inclusion of extra-financial has broadened their scope beyond SRI to include Extra Financial aspects and they conclude in their report on the denomination issue that:

"For the Survey this year, in consultation with UKSIF and the market, we specifically broadened the scope beyond SRI to include 'Extra-Financial'. While this has enabled a somewhat wider range of data to be gathered, it has also brought into sharp relief the question of nomenclature. There is no easy, single answer – demonstrating that this is very much an 'industry' in transition, and a reflection of the ongoing 'niche vs. mainstream' debate. A perennial debate – yes, but the terms of reference are changing, as we explore in more detail in the 'Market Commentary & Analysis' section.

(Thomson Extel and UKSIF, 2006)

So, Thomson Extel and UKSIF (2006) recognise the early development stage in which investments take social and environmental aspects into account. The terms of reference and how they are interpreted will change since the development of investments that take social and environmental concerns into account is not mature yet but is to go into a converging phase. The development, hence, is still in the fluid diverging phase (cf. Utterback, 1996) and variants on socially responsible investments appear frequently. For example, one term used by BELSIF, Dexia, Eurosif and the OECD, among others, is 'sustainable and socially responsible investments'. Then, we have the increasingly used term 'extrafinancial' which may be interpreted as the aspects dealt with that do not have materiality, according to some critiques. The intention, however, is probably to indicate that these are aspects that usually are not considered financial but are in fact material and, thus, possess a financial value that is not yet realised (cf. comments by respondents in Thomson Extel

and UKSIF, 2006). Similar discussions on the linkage to financial value exist for the terms ‘ethical investments’ and ‘sustainable investments’.

The evolution of voluntary corporate reports on how the reporting firms manage and view environmental and social aspects related to their actions and business activities is similar to the development of investments that take environmental and social considerations. KPMG International, in its surveys on voluntary corporate reporting (KPMG, 2005), had to come up with an all-embracing denomination, for these diverting sets of voluntary reports, calling them corporate responsibility reports. More on this change in terminology and to somewhat lesser extent changes in reporting practices of corporate voluntary reports from: corporate environmental reports, sustainability reports and corporate responsibility reports is illuminated in Cerin (2005; 2006a). Illustrative references on how the application of these terms have changed over time can be seen in the international surveys on voluntary reporting by KPMG every third year (KPMG, 1993; 1996; 1999; 2002; 2005; 2008).

We would suggest that a similar wording, like responsible investments, to be applied to investments that incorporate concerns for social and/or environmental aspects as a mean to embrace the various concerned investment denominations existing today i.e. ethical investments, socially responsible investments, sustainable investments, sustainable and responsible investments or ESG factors and extra-financial analysis.

## **4.1 A general and brief description of extra-financial assessments**

Most ESG information providers that e.g. intend to rate firms or to provide a clearer picture how the firms analysed relates to environmental and social concerns (Hedesström and Biel, 2008) have seen in their comparisons of ESG information providers that they have a focus towards information that describes companies’ environmental preparedness like policies, management reporting et cetera, which are issues of generic character and not really linked to the assessment of business risk and certainly not of business opportunities (cf. Cerin and Dobers, 2001b). The paragraphs below in this section depict the methodology suggested by Cerin (2006b) for enhancing the financial analyses with environmental and social aspects that influence corporate future cash flows, hence, an Extra Financial Analysis. These aspects are not often claimed not to be included in financial analyses and are oftentimes viewed as immaterial.

In order for retrieving a better understanding how social and environmental aspects affect corporate cash flows and future profits, following understanding is beneficial: To take into account not only **A**) how the firms analysed affect the environment and society, but also **B**) how the firms in turn are affected by how they themselves effect the environment and society (e.g. by regulations or boycotts) as well as **C**) how constraints that the environmental and society (e.g. limited resources)<sup>1</sup> put on the industry to which the analysed firm belong. These listed aspects can then constitute a foundation for assessing the corporate risks and opportunities.

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<sup>1</sup> Limited resources could be precious metals that are needed for industrial process and the limited number of ‘working force’ in economically overheated regions. Aspects like residual capacity (e.g. nature’s ability to embrace substances with global warming potentials or acidification potentials without collapsing into overheated climate or dead lakes) could very well be seen as a limited resource for a firm to operate, but such restrictions affect the firms predominantly via societal actions like regulations and boycotts.

To operationalise these considerations into an Extra-Financial Analysis (EFA) of firms, a workable way is to divide the assessment into two steps. In brief the **first step** is a sector analysis where decisive conditions of the industry, associated stakeholders and future scenarios are identified. In the **second step**, these conditions are subsequently linked to individual companies' revenue dependency on these decisive conditions – *a risk side* – and the company's strategic management how to approach them – *an opportunity side*.

Residual

- **Step one – Sector analysis:**

The sector study starts off with the identification of the stakeholders that influence the industry/sector. Thereafter, all major environmental and social aspects that are considered sector relevant to the identified stakeholders are assessed. What are the relevance of these aspects in terms of risks and opportunities? Then, a weighting for each environmental and social aspect can be developed to present the importance of the aspect for the industry/sector's development.

- **Step two – Company analysis:**

The company study (commonly companies within a sector could be analysed) starts off with identifying company revenue's dependencies on the aspects that are of concern for the industry/sector stakeholders. Thereby, the performance of company offerings and their future designs – which are linked to company cash flows – are in most industries of enormous importance. Also, the transparency of the company towards its stakeholders as well as strategy in R&D, product portfolio, legislative processes and marketing are examined. How will alterations in the stakeholders' actions change the revenues of the firm and how can the company's strategies turn these changes into a competitive advantage? These company findings are then compared to its industry/sector peers on an aggregated level.

### Identification of Influential Stakeholders and Relevant Environmental and Social Aspects

If looking at companies in the Automobiles Industry (the MSCI GICS classification) the important stakeholders have to be identified among a common set like by EIRIS and Dexia Asset Management: stakeholders are *Employees, Regulators* and *Local communities* (EIRIS, 2007) or *Shareholders, Employees, Clients, Suppliers, Environment* and *Society* (Vermeir W, Herinckx G [at Dexia], 2006). Worth noticing is that Dexia's selection of stakeholders originate from groups that are more closely linked towards value creation and the financial outcomes of the firm like clients, suppliers and shareholders, while not explicitly mentioning the imperative stakeholder group regulators but incorporating the legislators into the group society.

By mapping out the stakeholders of the industry in accordance to their importance we get an idea of the risks and opportunities that the relations with these stakeholders encompass. The resulting risks and opportunities from these interactions are then grouped and could encompass following aspects for the automobiles industry (cf. Cerin, 2006b):

- Global Development Trends

- Vast Latecoming Economies

- The gigantic production in these countries will initially decrease prices globally of some products, but the following consumption within these countries will eventually change the business realities and make resources taken for granted – materials and processes – in the industrialised world difficult to compete for.



- Resource Scarcities
  - Carbon Constraints
    - The trading schemes and future emission legislation globally are increasingly making the ability to emit CO<sub>2</sub> a matter of having the resource (rights) to emit.
  - Energy
    - Considerable attention is put on the energy consumption of vehicles since the world has now reached peak oil and the need for fuel is steadily increasing with the growing global vehicle fleet.
  - Metals, Plastics
    - Global plastics production has reached world maximum capacity
    - Automobile industry need for platinum group metals year 2030 will exceed current annual global production of platinum group metals, unless likely technological trajectories are altered (e.g. catalyst and fuel cell).
- New Technologies
  - R&D development
    - What technological trajectories are the company involved in and how diverse is that research portfolio – e.g. more resource efficient internal combustion gas engines, diesel engines, flexifuel engines with bioenergy option, plug-in electrical-internal combustion engines or hydrogen engines?
- Policy Development Processes
  - What approaches are the company applying to legislative processes relating to the identified environmental and social aspects that are of concern for the industry, such as regulation of GHG emissions, fuel consumption, recyclability or excessive speeds? Is the firm trying to achieve a competitive advantage for its own technologies or is it trying to stall the regulatory process?
- Supply Chain Management
  - The automobile manufacturers, as other industries, are increasingly receiving increased attention from non-governmental organisations and media of working conditions not acceptable to workers in the industrialised world.
- Traffic casualties
  - Increasingly authorities view excessive driving and many automobile manufacturers' tendency for selling autos by calling for people's crave for speed as a real society problem to address. To be reliant on speeding for company revenues could, hence, become a problem in the nearby future.
- Et Cetera

## **4.2 Risks and Opportunities from Carbon Constraints**

The above risk and opportunity aspects of the identified sector/industry stakeholder interests serve to illustrate what aspects a sector/industry assessment may encompass. The risk and opportunity assessment of one of them, namely carbon emissions of the automobile firms' products and cost for each sold product for attaining future legislative initiatives, followed by assessments of company strategic management of R&D and policy development are all displayed below. These are part of an analysis made by World Resource Institute (WRI) and Sustainability Asset Management (SAM) 2004 (SAM and WRI, 2004). The study is denominated "*Changing Drivers*" due to tighter carbon emissions regulations expected to come into force until 2015, initiated by the goals of the Kyoto

Protocol. The chosen timeframe 2002-2015 for the SAM-WRI study was considered the timeframe within which technological and policy regulatory frameworks could be predicted fairly enough for carrying out the risk and opportunity analysis. Ten original equipment manufacturers<sup>2</sup> and their product portfolios were analysed; BMW, DC, Ford, GM, Honda, Nissan, PSA, Renault, Toyota and VW. From now on the firms are as a group referred to as OEMs (Original Equipment Manufacturers) and the sector is called the auto sector.

To show how an assessment may be look like for another aspect, that is not as well discussed but may become as important for the automobile industry, a risk-and-opportunity matrix is made for the road deaths linked to the automobile manufacturers' products through OEM marketing and driver handling during use (cf. Cerin, 2006b).

### **Carbon intensity of OEMs' Profits**

In the diagram below, figure 2, each OEMs' product portfolio has been divided into three groups based on whether the vehicles are low intensity (< 200 g CO<sub>2</sub>/100km), medium intensity (200-270 g CO<sub>2</sub>/100km) or high intensity (> 270 g CO<sub>2</sub>/100km) emitters of carbon during use. The Y-axis depicts, based on the OEMs' product portfolios emissions, how large share (%) of each OEM's profits comes from the low intensity, medium intensity and the high intensity vehicle groups. The further out to the right on the X-axis the larger share of the companies' profits are dependent on high carbon emissions. It is quite obvious that in the auto sector the PSA, Renault and VW manufacturers have products with low carbon use during usage and, hence, PSA, Renault and VW has low carbon intensity of their profits.

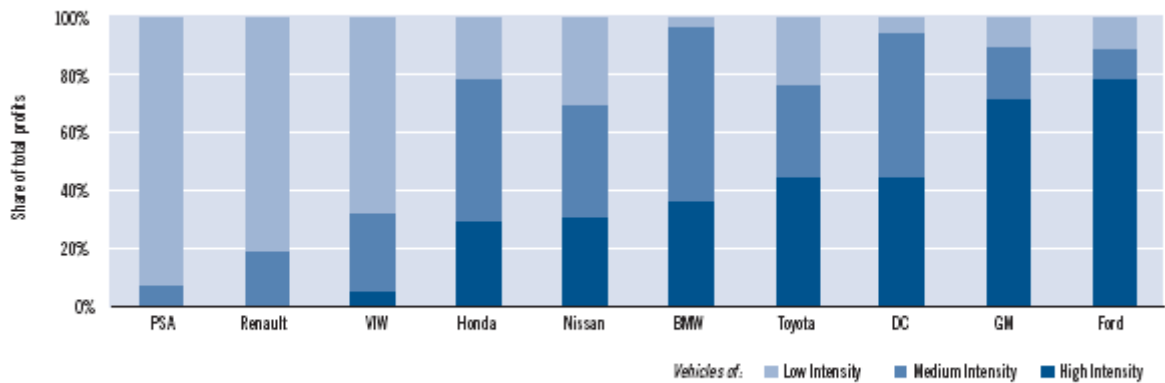
Actually, today, the European Parliament has passed a bill requiring much stricter emission standards (EC, 2008) than was predicted when the SAM-WRI study was carried out, demanding each manufacturer's product portfolio to meet 130 grams per kilometre (g/km) by 2015 and leveraging penalties to the producer that increases in size per g/km for each surplus g/km. See more on this under Section 10.4 in this report.

Unlike the PSA, Renault and VW above: The profits of Ford and GM are, however, indeed dependent on the highest carbon intensity (i.e. highly CO<sub>2</sub> emitting vehicles) and, furthermore, a carbon intensity cost that extensively is to be worn by their customers – the stakeholders that provide the cash flow and future profits of the companies. Truly a business risk, also, when considering increasing oil prices. The average auto sector carbon intensity of profits can be characterised by Honda, Nissan, BMW and Toyota.

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<sup>2</sup> At the time of the SAM-WRI study 2004 the EOM's encompassed following brands among others which has changed considerably today after the automobile sector crises 2008-09 where some of the very most prestigious brands have been acquired by Chinese and Indian automobile manufacturers. Some of the brands and sub-brands (and partly owned brands) as of 2004 were: BMW (Mini, Land Rover, Rover, Rolls-Royce), DC Daimler-Chrysler (Chrysler, Dodge, Jeep, Mercedes, Mitsubishi, Plymouth, Smart), Ford (Aston Martin, Lincoln, Mazda, Mercury, Volvo), GM (Cadillac, Chevrolet, Daewoo, Holden, Pontiac, Oldsmobile, Saab, Saturn, Vauxhall), PSA (Citroën and Peugeot), Renault (Dacia, Nissan, Infinity), Toyota (Lexus) and VW (Audi, Bentley, Bugatti, Lamborghini, Seat, Škoda).

**FIGURE 2. CARBON-INTENSITY OF OEM'S PROFITS, 2002**



*Notes:*  
High: Greater than 270 g CO<sub>2</sub>/km (less than 20.5 mpg); Medium: 200 - 270 g CO<sub>2</sub>/km (20.5 - 27.5 mpg); Low: Less than 200 g CO<sub>2</sub>/km (greater than 27.5 mpg). Boundaries for high, medium and low categories were based on the current CAFE standards for cars and light trucks, rounded slightly for convenience.

Figure 2: By grouping the carbon emissions from the manufacturers' sold vehicles into three intensity groups the figure depicts the carbon-intensity of the automobile manufacturers' profits.

### Cost per sold vehicle to meet CO<sub>2</sub> emissions standards by 2015

The Y-axis in the diagram below, figure 3, indicates the average cost per sold vehicle (\$) of each OEM's product portfolio to meet the approaching emission standards within three of the world's major auto markets i.e. North America, Europe and Japan. The further out to the right on the X-axis the lower extra cost per sold vehicle has the OEM to meet the anticipated future carbon emission standards. The extra cost for Honda is e.g. estimated to be lower than \$ 50 per vehicle while for BMW the additional cost for meeting the approaching carbon constraints is about \$ 650 – that constitutes a good 13 times higher additional cost for BMW per sold vehicle compared to Honda.

PSA and Renault have about \$ 100 additional costs per vehicle to meet future legislation while VW, Nissan and Toyota's costs per vehicle is twice as large – \$ 200. If we once more double that cost per vehicle for the OEMs to meet future carbon regulatory restrictions we get the \$ 400 cost per vehicle produced by DC, Ford and GM. It may seem odd that a company like Toyota that is so well known for its indeed fuel efficient products, like the hybrid engines, are indeed reliant on heavier vehicles. Not often advertised in these environmental contexts is that a considerable part of the Toyota product portfolio is made up by huge and heavy SUVs and trucks and, hence, a higher costs per average vehicle is estimated for Toyota to meet future regulatory carbon restraints than for Honda, Renault and PSA.

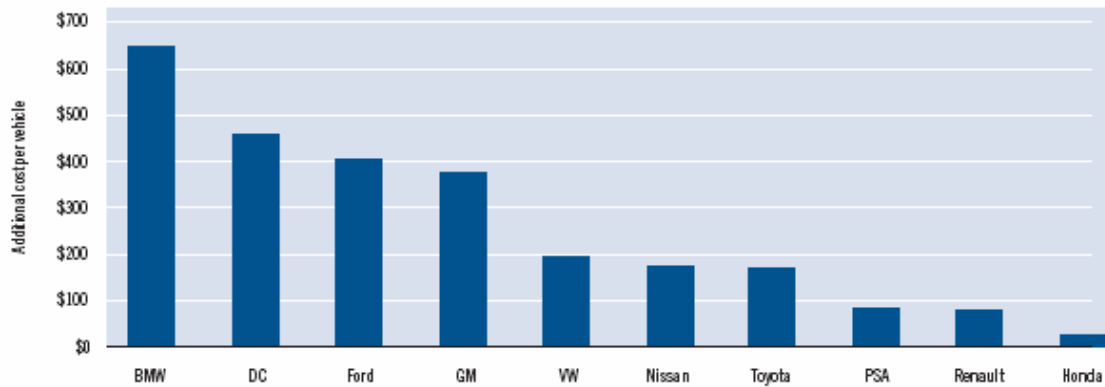


Figure 3: Emission reduction cost per vehicle to meet CO<sub>2</sub> emissions standards as of 2015.

### Management quality for developing lower-carbon technologies

This type of assessment, trying to analyse the quality of handling and carrying out something as complex like developing future technologies is indeed a very hard, not only for corporate managers with superior access to information, but especially from the outside-and-in perspective – like that of the analysts. The measurement of the easier to access figures like resources spent on R&D can be misleading. A specific analyst knowledge about the sectors technology and future policy and resource constraints is needed and the assessment will be a qualitative one that then can be translated into quantitative numbers as done by the SAM-WRI (2004) study.

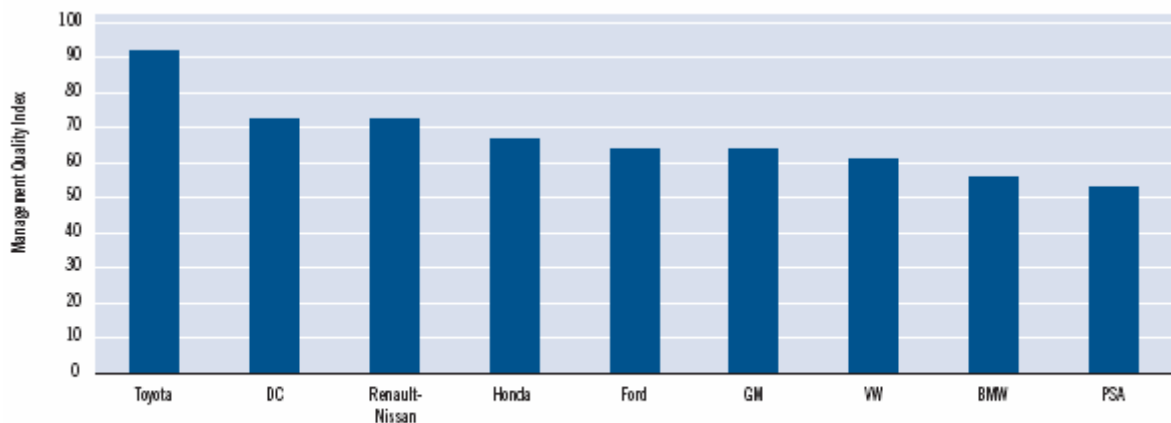
This resource intensive type of qualitative and knowledge demanding analysis has refrained most ESG information providers to include such information in their assessments as shown by Hedesström and Biel's (2008) comparisons of ESG information providers. The analyses tend to utilise available information as one important mean of data selection (cf. Cerin and Dobers, 2001b). This phenomenon is detected among the voluntary corporate reporting on environmental and social aspects as put by Cerin (2002a) regarding the content in environmental and sustainability reports by firms on the OM Stockholm Exchange: *"The divergence of content often fails to convey the actual information wanted or needed by the targeted stakeholders, and may instead contain verbose accounts of what scant relevant material there is available within the business."* These information asymmetries from corporate reporters to analysts, of course, affect the assessment of firms' handling of ESG issues.

The Y-axis in the diagram below, figure 4, indicates an index of the management quality (%) for each 10 OEMs in the study. Toyota has received the highest quality index – a good 90 % – for its management of low carbon technologies. The other firms' technology quality management indices range between 70 percent down to 50 percent in descending order, DC, Renault-Nissan, Honda, Ford, GM, VW, BMW and PSA. Since this is a qualitative assessment where considerable normative decisions eventually will influence the valuation of different strategies the results may always be discussed<sup>3</sup>.

The assessed OEMs' technologies developments are clustered into four categories:

- Incremental Technologies (ICE – improving the gasoline internal combustion engine)
- Diesel (CIE)
- Hybrid (HEE)
- Fuel Cell (FCE)

One of these categories were, however, dropped in the assessment of management quality assessment low-carbon technologies to meet the increasingly stringent regulations in the world's major automobile markets by 2015 since by then fuel cell engines (FCE) were not perceived as likely to attain a marked share of considerable size, merely market introduced at most. (Since the study was published 2004 there was no assessments of plug-in technologies, which by 2009 have become one of the major hopes, in various combinations with the other categories.)



*Note:* Management quality score for BMW reflects its activities regarding the hydrogen-powered internal combustion engine. Renault and Nissan receive the same management quality assessment scores to reflect the expected level of integration and strategic coordination between the two OEMs over the next decade.

Figure 4: Management quality of low-carbon technologies.

<sup>3</sup> As briefly mentioned in figure 4 above BMW has a different approach to hydrogen fuels. The catch for them is to develop the internal combustion engine (ICE) instead of, as everyone else trying to develop fuel cell based engines instead. There are some drawbacks with the ICE alternative since it is not as efficient as the FCE and has some storage problems. The ICE trajectory, on the other hand, has enormous leverage opportunities since it can overcome the biggest salient of going over to a hydrogen system since BMWs ICEs' for hydrogen can also be running on gas. Thereby, the ICE hydrogen alternative could enhance a path dependence over other technologies like fuel cells, which has not really has been taken into consideration in the SAM-WRI assessment of the business opportunities through management of low carbon technologies. (Honda has also an ICE hydrogen approach as BMW, but utilising the Wankel technology instead of the Otto.)

### Illustrating the risks and opportunities of carbon constraints

The below four-fielder below, figure 5, is a very illustrative way of describing both the *Cost per sold vehicle to meet CO<sub>2</sub> emissions standards by 2005* along the Y-axis and the *Management quality for developing lower-carbon technologies* along the X-axis. The axes do, hence, represent the information from the previous two tables in figure 3 and figure 4. These axes are in the figure 5 below denominated *DECREASING RISKS FROM CARBON CONSTRAINTS* along the Y-axis and *INCREASING OPPORTUNITIES FROM CARBON CONSTRAINTS*.

What is interesting about the four-fielder below is that it clearly shows that the three EOM's – Honda, PSA and Renault – being faced with the lowest costs, and hence lowest risk, per vehicle to meet the carbon constraint of the anticipated regulation as of 2015 are not the companies with the biggest opportunities from future carbon constraints. Just measuring the risks is, thus, not a good proxy for estimating the future profits of a firm. Apart from the risk side there is, hence, a need to have an idea about the management's ability to develop future cash flows through technological development, policy engagement and customer appeal.

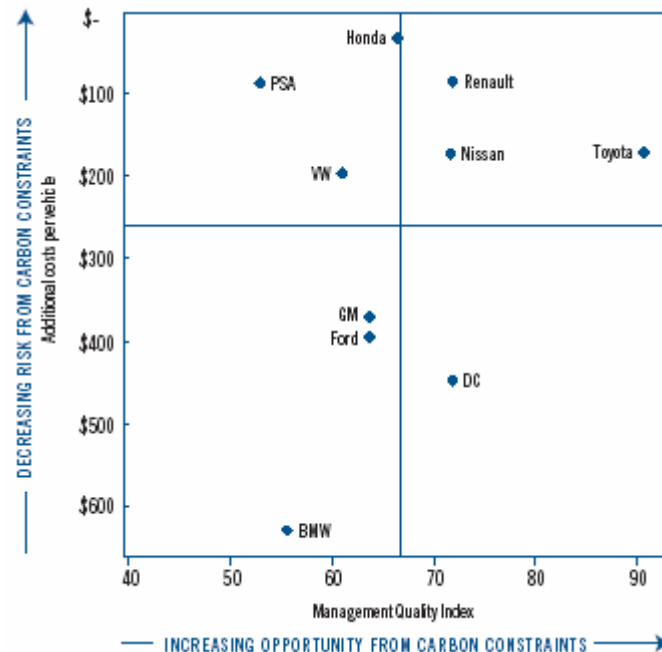


Figure 5: The risk and opportunity 4-fielder from carbon constraints. Emission reduction cost per vehicle to meet CO<sub>2</sub> emissions standards as of 2015 vs. Management quality of low-carbon technologies.

We see in the four-fielder above (figure 5) that the OEMs that have the lowest risks and lowest increased costs to meet the anticipated regulatory carbon targets are not necessarily the ones with the greatest business opportunities. Furthermore, it is seen that the American auto producers are locked into product niches that at that moment (2003-2004) were indeed lucrative with high revenues per sold vehicle, that is the Pickup Trucks and Truck based SUVs. Today, this dependency has been very devastating for these firms, when the oil prices have been soaring. BMW is placed in the bottom with the highest risks of the all manufacturers. One could, however, question if the company has got a fair opportunity rating in the SAM-WRI analysis since BMW's internal combustion hydrogen technology has some great potentials for flexibility when introducing a hydrogen infrastructure for fuelling vehicles. This is the major obstacle for introducing the new technology, especially for the fuel cell trajectory adopted by other manufacturers whose cars only

can run on hydrogen. Also, one could question if the risk is actually really linked to the extra cost of sold vehicles in the case of high end products like BMW's vehicles that to a larger degree attract customers that are not as price sensitive as the general auto buyer. Overall, though, the plotting of firms in the four-fielder by SAM-WRI (figure 5 above) makes much sense and provides a good picture of the potential future winners of increased CO<sub>2</sub> restrictions within the auto sector.

### 4.3 Risks and Opportunities from Death Constraints

Mapping the risks and opportunities into a four-fielder does not only have to be on the carbon constraints of the auto sector as done above, but can be done on other environmental and social aspects that are considered important for the sector/industry and the companies comprising it. This section makes a brief illustration on how the aspect of death constraints may affects the Original Equipment Manufacturers (OEM) in the automobile industry in a similar way as is presented in the four-fielder of previous section on carbon constraints.

The European Commission has in *"The route to road safety"* expressed concern over the vast number of traffic casualties within the Union and has stated: *"Speed has fatal attraction for many modern motorists, causing needless deaths and injuries."* The commission has, further, made clear in an EU initiative to combat *"Excessive Driving"* which is stated to be the main cause for 40,000 road deaths annually in EU-15 countries and about 1.5 million casualties (EC, 2001). For today's extended European Union these numbers are considerably higher.

The European Transport Safety Council estimates the costs of road traffic injuries to society in the EU to be 180 billion Euros per year and a third of these fatal and serious accidents are caused by excessive driving. The report continues; an estimated 200,000 families per year were affected by the death or life-long disability of a family member (EC, 2005).

Without mentioning the family tragedies, the costs to society are enormous too. In blunt each death is estimated to cost € 1 million and the yearly costs for casualties within the EU countries are twice the annual budget of the EU. The differences in casualties per one million persons vary considerably between different EU member states where some countries have twice as high casualty numbers as others (EC, 2001).

The European casualty numbers per one million persons are furthermore low in a global perspective. So, it is not difficult to see a great incentive for nations around the world, taking measures to refrain road deaths and casualties in line with the expressed views by the European Commission. The Commission state that about 80% of drivers flout speed limits which is seen as a real society problem to address and concurrently many automobile manufacturers have a tendency for selling autos by calling for people's crave for speed and, actually in ads, asking people to break the law by unlawful speeding – by excessive driving in the products they sell. The EU itself has set up a goal to half the road casualties by 2010 (EC, 2001) and the European Commission has recommended (EC, 2005) the member states of the union to implement surveillance systems for automatic speed control of vehicles on the roads e.g. by using satellites and GPSs.

These road speed surveillance systems will soon become a reality within the European Union as recently detected by the Guardian: *"The government is backing a project to install a "communication box" in new cars to track the whereabouts of drivers anywhere in Europe,... The EU officials behind the plan believe it will significantly reduce road accidents, congestion and carbon emissions. A consortium of manufacturers has indicated that the router device could be installed in all new cars as early as 2013."* The same article reveals that actors

within the telecom industry are involved in developing the European-wide car tracking system, the Cooperative Vehicle-Infrastructure Systems (CVIS) project, obviously seeing new business potentials to a society problem of another industry sector (The Guardian, 2009).

Such regulatory initiatives will decrease the business case for selling cars for excessive driving in the future, which is currently one product niche with high revenues. Plenty of OEMs have products in that niche, but some manufacturers are more focused towards those segments than others like BMW. These, sources of excessive revenues may, thus, become less lucrative in the nearby future.

So, if looking at the four-fielder in figure 6, on the fictive risks and opportunities by OEMs in the auto sector from legislative constraints to delimit road deaths and casualties we see that manufactures like Nissan and Toyota would have low additional cost per vehicle to avoid the injuries they are causing during use while manufacturers like BMW and DC would have considerable additional costs and hence a greater business risk. On the opportunity side we see that manufacturers like Renault that has come far in their safety research and safety implementations in vehicles would have a greater business opportunity than some other firms as well as would their extra cost per vehicle to comply with the law be lower. – cf. Nissan and Toyota.

Auto manufacturers are trying to develop warning systems and systems that avoid accidents, which will – if successful – decrease the needs for surveillance systems to keep down speeds and, thus, ensuring the survival or even thrive of the horse power rich product niche. Here DC has been on the forefront, but several actors like Ford and BMW are catching up with the technology frontier.

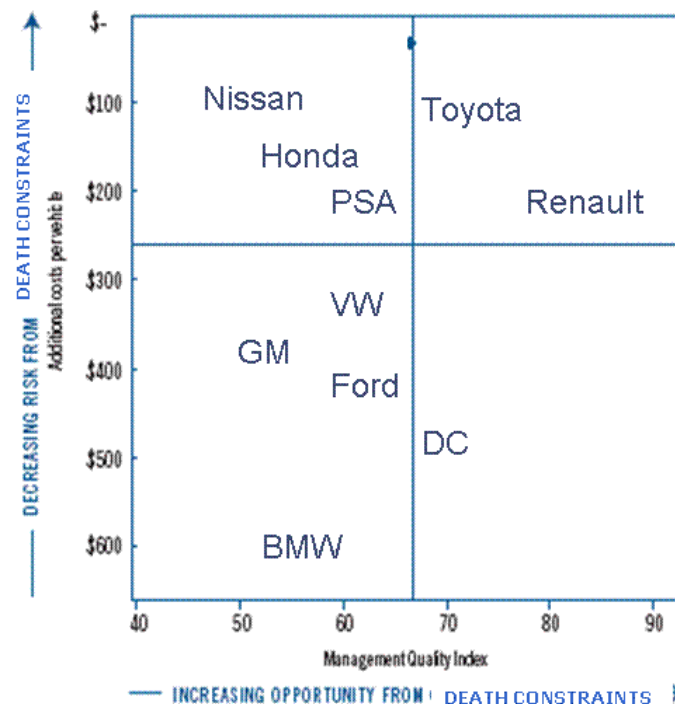


Figure 6: The risk and opportunity 4-fielder from death constraints. Emission reduction cost per vehicle to meet CO<sub>2</sub> emissions standards as of 2015 vs. Management quality of low-carbon technologies.



Another good example on how to analyse and illustrate firms' risks and opportunities within a sector or industry due to a specific environmental or social aspect is the RiskMetrics assessment of the company risks and management opportunities of the European Community Chemical legislation REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) which delimits the toxicity and impacts on humans and the environment of the substances produced and used in industry and ultimately in society. The regulation affects all industries using the substances of regulatory concerns, but is ultimately a change actor in the chemicals industry. The RiskMetrics study, named *"Toxicity and Sales. How REACH is reconfiguring the Chemical Industry"*, depicts in a four-fielder that companies' risk exposures along the x-axis and the companies' risk management strengths along the y-axis. The sizes of the company circles indicate the proportion of companies' sales that go to the European Union and, thus, the dependency of the European market and exposure to the REACH EC regulation. The RiskMetrics study illuminates how legislation will get stricter as well as spreading to other regions of the world. The study, moreover, also makes sub-analyses on firms e.g. regarding Product Liability Risks, Energy Management and Gross Profit Margins and Cleantech Investments (cf. Eid, 2009).

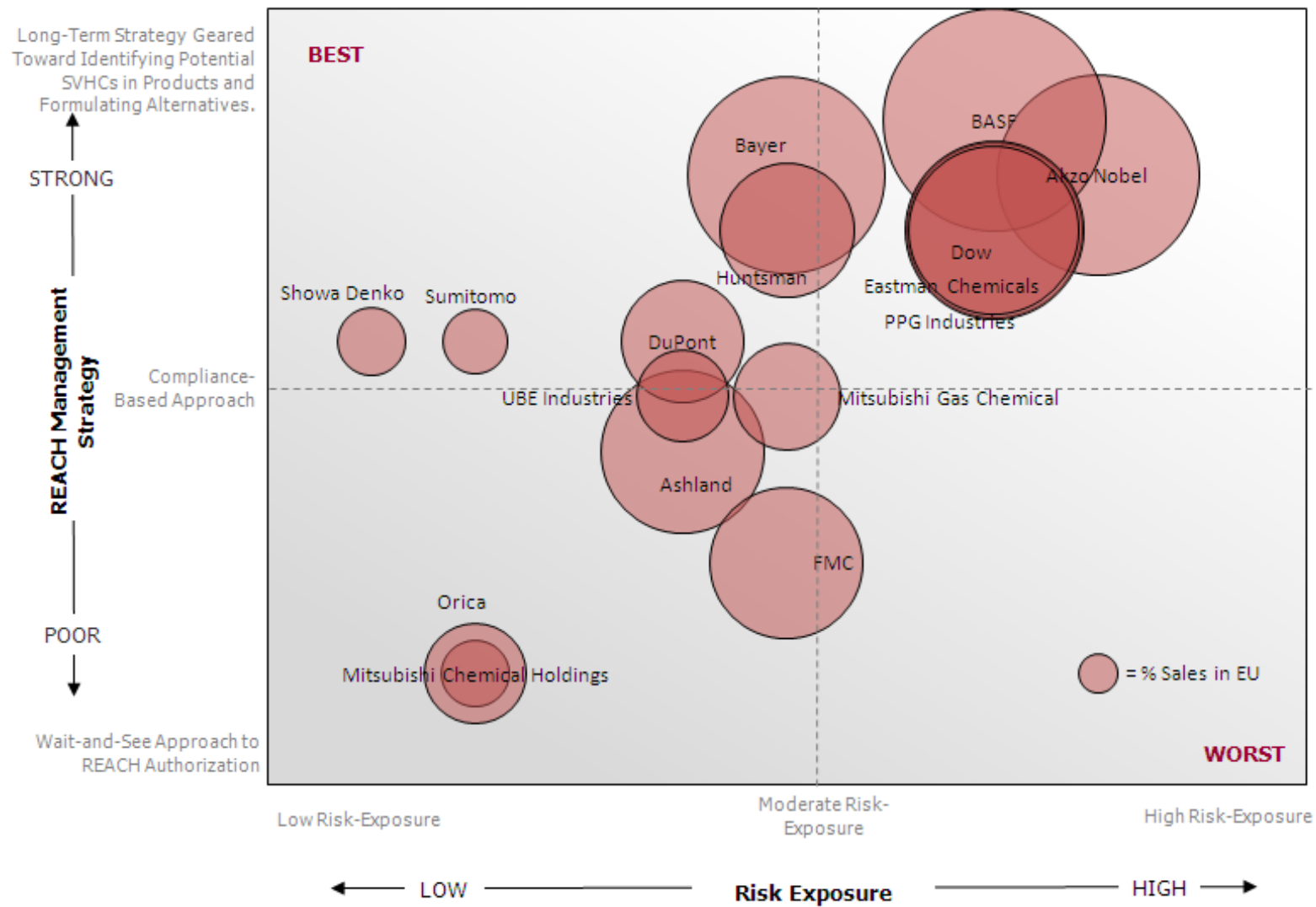


Figure 7: Management Capacity vs. Risks from RiskMetrics study on “Toxicity and Sales. How REACH is Reconfiguring the Chemical Industry” (Eid, 2009).

## **5 The EFA Project Kickoff – CPM Extra Financial Analysis Workshop May 7th-8th 2007**

The Extra Financial Analysis (EFA) Project started with a kickoff workshop May 2007 at Chalmers University of Technology in Gothenburg, Sweden, in order to retrieve experience from the investment value chain, involved with social and environmental concerned investments. Participating at the workshop were actors involved in corporate environmental performance and social responsibility at analysed industry firms; those reporting on these aspects to external stakeholders; accountants reviewing and assuring voluntary reported information on firms' handling of environmental and social aspects; and analysts of economic, environmental, social and governance information to investors and portfolio managers.


Besides these actors, directly involved in the corporate social responsibility and in the permeation of that information to investors were participants from academia. Researchers that focus on corporate management of environmental and sustainability aspects as well as researchers developing tools for assessing the environmental burden of functional units of products to minimise the environmental load of products by influencing the design process of new products and technologies played a part in the workshop. Also researchers from accounting and finance participated in the workshop, presenting their research results.

The workshop consisted of a selected number of prominent people from respective area mentioned above and served as an exploration of insights into other areas of profession within the investment value chain. Corporate people were very keen in achieving a better understanding in how their firms are being assessed by the financial community on environmental and social issues, if these aspects were at all assessed. The participating ESG analyst and information providing firms – just like the firms constituting CPM at Chalmers University of Technology – were based in several different countries like the USA, Switzerland and Sweden and it turned out to be a great opportunity for the employees of the ESG firms to finally meet and listen to and discuss each others' methodologies for assessing firm ESG aspects.

Below are the presentations of two day workshop on Extra Financial Analysis that took place at Chalmers University of Technology in May 7<sup>th</sup>-8<sup>th</sup> 2007. The program and the participants of the kickoff workshop are displayed in Appendix I.

# CPM Extra Financial Analysis Workshop, May 7<sup>th</sup>-8<sup>th</sup>, 2007, Chalmers University of Technology, Gothenburg


Figure 8: Presentations at the two day kick-off workshop for the CPM EFA project




## CPM

Stage 5  
May 7, 2007

Peter Lysell






## Extra Financial Analysis - EFA




Workshop, May 7th-8th, 2007

### Outlining the (EFA) Project

Presented at  
Chalmers University of Technology, Gothenburg

May 7<sup>th</sup>-8<sup>th</sup>, 2007    Mohammed Behaj and Pontus Cerin






## Economic Value of Environmental Risk and Opportunity

Extra Financial Analysis workshop  
Gothenburg May 7, 2007

Sustainable Investment Research Platform  
[www.sirp.se](http://www.sirp.se)  
Lars G. Hassel

## Exploring environmental information in analysts' research reports


Henrik Nilsson

## Communicating CSR to the Financial Community

Lars-Olle Larsson

Öhrnings  
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Erik Alhøj



## SAM, Sustainability and Financial Performance

SAM Group


May 2007



## Sustainability Analysis, In Search of Risks and Opportunities

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Fredrik Wilkens, Head of Institutional Sales – Nordic countries  
Gothenburg, May 7, 2007




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- what actors needs to be involved in the process
- what actions is needed to move towards sustainability

Magnus Blinge




## Extra Financial Analysis - EFA

Workshop, May 7th-8th, 2007

### Group Discussions

Chalmers University of Technology, Gothenburg

May 7<sup>th</sup>-8<sup>th</sup>, 2007    Mohammed Behaj and Pontus Cerin



## 6 The Firms of the Research Project

### 6.1 ABB

ABB is active in around 100 countries and employs about 111 000 persons. ABB is active in many sectors with its core businesses in power and automation technologies. Like so much else at transport-equipment and electrical giant ABB, management development is based on achieving a distinctive balance between national and international competencies. ABB seeks to provide a role model for today's multinationals (Trapp, 1997).

-Environmental performance

The ABB declares that environmental management is one of the concerns highest business priorities and the corporation is committed among others to<sup>4</sup>:

- Conduct operations in an environmentally sound manner by applying environmental management systems, such as ISO 14001, in all operations and by applying environmental principles, such as commitment to continual improvement, legal compliance and awareness training of employees, in all our operations worldwide
- Promote environmental responsibility along the value chain
- Develop manufacturing processes with focus on energy and resource efficiency

ABB energy usages as of 2006-2008 are shown in table 2 below:

Table 2: Direct energy use (Gigawatt-hours – GWh)

Primary fuel	2008	2007	2006
Oil (11.63 MWh/ton)	104	103	117
Coal (7.56 MWh/ton)	0	0	8
Gas	416	437	410
District heat	250*	223	239*
Electricity	1323	1264	1265*
<b>Total energy used</b>	<b>2093</b>	<b>2027</b>	<b>2039</b>

\* The figures are based on reported data from 85 percent of employees and an assumed energy use of 3 megawatt-hours (MWh) per employee for district heat and 12 MWh per employee for electricity for the remaining 15 percent of employees.

Furthermore, ABB emissions of GHG are shown in table 3 below:

Table 3: ABB emissions of GHG (kilotons)

Source	2003	2004	2005	2006	2007
CO <sub>2</sub> from use of energy	911	824	870	833	835
SF <sub>6</sub> (in CO <sub>2</sub> equivalents)	229	253	295	558	398
CO <sub>2</sub> from transport by own fleet	n.a	350	350	350	350

Except CO<sub>2</sub> from use of energy which has decreased by 76 kilotons, SF<sub>6</sub> in CO<sub>2</sub> has increased since 2003 and CO<sub>2</sub> from transport by own fleet remained constant during the period 2003-2007.

<sup>4</sup> <http://www.abb.com/cawp/abbzh258/20d663570aa2a7e0c1256d3c005b8fe6.aspx>

The CO<sub>2</sub> emissions calculations are based on in-house energy use for production, lighting, heating and air conditioning, and include indirect emissions at utilities where ABB buys power. Sulfur hexafluoride (SF<sub>6</sub>) emissions are estimated to be equivalent to 3% of all SF<sub>6</sub> gas used by ABB. As from 2005, ABB started using a CO<sub>2</sub> equivalent for SF<sub>6</sub> of 22 200, as specified by the IPCC.

## 6.2 Akzo Nobel

In 1969 the AKU and the Koninklijke Zwanenburg Organon merged, forming *AKZO*, and in 1994 AKZO merged with Nobel Industries, forming *Akzo Nobel*. The new Akzo Nobel has 20 business entities. Bofors continues as a separate entity. Akzo Nobel produces chemicals, coatings, and (healthcare).

- Chemicals:  
The chemical industry includes companies that manufacture and/or distribute chemicals, including basic, intermediate, and specialty chemicals; petrochemicals; plastic resins and materials used in synthetic fibers; agrochemicals; and paints and coatings.

Following 2005 reorganization, the chemicals group now consists of five business units. Base Chemicals (BC), Functional Chemicals (FC), Polymer Chemicals (PC), Surfactants (SC) as well as Pulp and Paper Chemicals, under brand name Eka Chemicals (PPC). In 2007 the British ICI producing paint and adhesive became part of the Akzo Nobel Corporation.

- Coatings:  
Akzo Nobel is the world's leading coatings company with key products paints, services and specialized equipment for the car repair and transportation market. The coatings groups consist of the business units: Car Refinishes (CR), Decorative coatings, Industrial finishes (IF), Powder coatings (POW), Marine and protective coatings (MPC), (Nobilas).
- Environmental performance:  
The environmental issues concerns all aspects related to both air pollution and green house gases but also the emission of different toxic substances and metals. The environmental issue, moreover, relates to consumption water and raw materials. When it comes to green house gases, Akzo Nobel states that it shares the IPCC's concern about global warming and is committed to reducing emissions of green house gases.

According to the CSR report (2006), see data shown in table 4 below, Akzo Nobel has good trends for key performance indicators (KPI) since 2002. In the case of energy consumption for instance, although it has decreased by almost 20% since 1990, figures for 2002-2006 show a stabilisation around this level. The Akzo Nobel targets for 2010 predict an enhancement of most of the variables.<sup>5</sup>

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<sup>5</sup> [http://www.akzonobel.com/NR/rdonlyres/7ED3CC39-9A91-4CAE-BBD7-8DCCB3E8E204/0/CSR\\_Report\\_2006\\_.pdf](http://www.akzonobel.com/NR/rdonlyres/7ED3CC39-9A91-4CAE-BBD7-8DCCB3E8E204/0/CSR_Report_2006_.pdf)

Table 4: Akzo Nobels KPI indicators

Parameter	2002	2003	2004	2005	2006	2010
Number of serious incidents (a)	>	>	>	15	3	0
Lost Time Injuries Frequency Rate*	3.0	2.8	2.0	2.3	2.2	1.2
Total Reportable Rate of Injuries*	>	>	>	7.4	6.8	5.0->2.0
Number of Lost Time Injuries of Contractors	>	>	>	76	72	
Total Illness Absence Rate in %	2.6	2.5	2.5	2.4	2.3	2.2
Occupational Illness Frequency Rate*	>	>	>	0.5	0.4	(b)
% Zero and Low Carbon Power Consumption	>	>	>	73	74	72
Net Energy Consumption Index (1990 = 100%)	80	83	82(c)	81	81	79
Direct CO <sub>2</sub> Emissions (Million T)	>	>	>	3.3 (d)	3.2	(b) (d)
Chemical Oxygen Demand, discharge to surface**	3.6	3.2	3.7	2.4	2.4	1.5
Volatile Organic Compound emission to air**	5.7	5.8	5.3	5.1	4.9	4.0
Non-Reusable Waste**	97	95	70	109	112	75
Hazardous Waste as % of non-reusable waste	23	19	15	23	24	(e)
Fresh water consumption***	>	>	>	298	285	

> introduced in 2005  
 \* per 1 million hours worked  
 \*\* metric kilotons  
 \*\*\* million m<sup>3</sup>

(a) Serious incidents involving fatalities or grave bodily injury to our employees or contractors, and incidents involving serious environmental, financial or reputational damage.  
 (b) No target: absolute figure, related to magnitude of business activities.  
 (c) Old figures restated due to changes in portfolio.  
 (d) Figures based on 100% emission contribution of joint ventures.  
 (e) No target: percentage of hazardous waste is for information only. Target is focused on reduction of non-reusable waste.

In order to achieve the goal to reduce energy consumed during manufacture of products Akzo Nobel uses different methods such as:

- Giving rewards to employees when enhancing efficiency such as the Award Economic Value Added (EVA) – which focus on capital productivity which is granted annually. In 2002 for instance, the annual EVA Award was granted for a project to use recycled waste sulfuric acid instead of expensive hydrochloric acid, resulting in substantial cost savings.<sup>6</sup>
- Energy Efficiency Plan (EEP) which is designed to help plant personnel monitor energy consumption during production and to identify potential energy savings opportunities. This is accomplished by using either standard pinch studies or by analysing the primary energy users in the plant. By monitoring the specific energy consumption on a per-unit-product basis, plant management and operations personnel can assess and improve the plant's energy performance. An EEP introduced at Akzo Nobel's European sites in 1994 has helped staff to effectively monitor energy consumption for both entire sites and specific processes and help to identify potential energy savings projects.<sup>7</sup>
- Akzo Nobel has also applied a so called Plan Wide Assessment (PWA) approach to identify energy and cost saving opportunities at different plants. The PWA investigates overall energy use in industrial facilities in order to find options for energy saving.<sup>8</sup>

<sup>6</sup> <http://www2.akzonobel.nl/finance/eva.asp>

<sup>7</sup> [http://www1.eere.energy.gov/industry/bestpractices/pdfs/ch\\_cs\\_akzo.pdf](http://www1.eere.energy.gov/industry/bestpractices/pdfs/ch_cs_akzo.pdf)

<sup>8</sup> [http://www1.eere.energy.gov/industry/bestpractices/pdfs/sum\\_akzo-nobel.pdf](http://www1.eere.energy.gov/industry/bestpractices/pdfs/sum_akzo-nobel.pdf)

## 6.3 SCA

SCA was founded in 1929 and has since then developed from a pure forest company to a company that also offers personal care products, tissue and packaging. The man behind the formation of the company was Swedish financier Ivar Kreuger who merged some ten Swedish forest companies into a single group. The company consisted of forests, sawmills, pulp mills, machine shops and power companies.

SCA is now a global consumer goods and paper company that develops, produces and markets personal care products, tissue, packaging solutions and solid-wood products in more than 90 countries.<sup>9</sup>

- Environmental performance

SCA sets out the corporation's environmental agenda in the 2008 Sustainability Report, including the following:

- reduce organic content in wastewater
- reduce total water consumption
- more efficient energy use and renewable energy production
- control sources of all fresh fibre based raw material.<sup>10</sup>

SCA report in their environmental report for instance, the following: "SCA is active throughout its value chain, from forest management to finished product. This active approach provides SCA with excellent opportunities to control the Group's total climate impact".<sup>11</sup>

Figure 9 below show SCA environmental performance including reductions of NO<sub>x</sub>, SO<sub>2</sub> and CO<sub>2</sub>.<sup>12</sup>

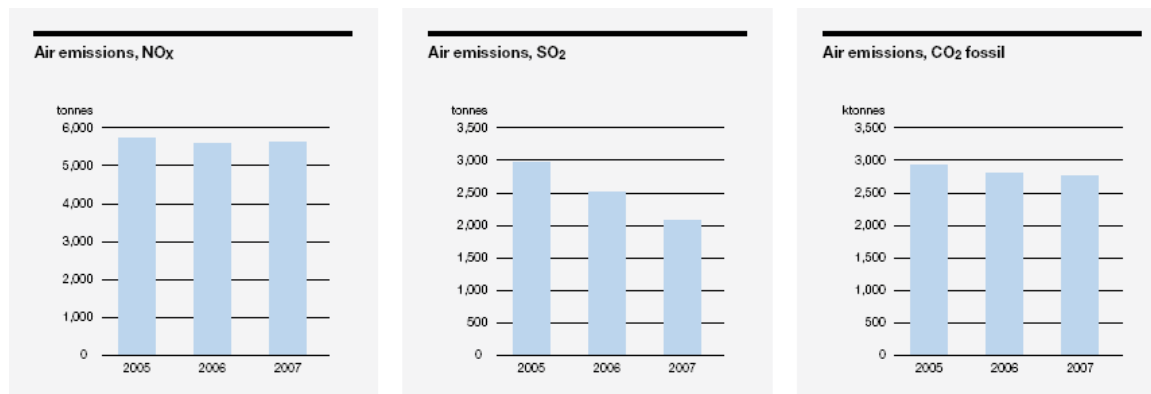


Figure 9 SCA's air emissions of NO<sub>x</sub>, SO<sub>2</sub> and CO<sub>2</sub> as of 2005-2007.

<sup>9</sup> [http://www.sca.com/en/About\\_SCA/SCA\\_in\\_Brief/](http://www.sca.com/en/About_SCA/SCA_in_Brief/)

<sup>10</sup> [http://www.sca.com/Documents/en/Env\\_Reports/SCA-hr2008-ENG\\_FINAL.pdf](http://www.sca.com/Documents/en/Env_Reports/SCA-hr2008-ENG_FINAL.pdf)

<sup>11</sup> [http://www.sca.com/Documents/en/Env\\_Reports/SCA-hr2008-ENG\\_FINAL.pdf](http://www.sca.com/Documents/en/Env_Reports/SCA-hr2008-ENG_FINAL.pdf)

<sup>12</sup> <http://www.sca.com/en/Investors/Reports/Environmental-social-reports/>



## **6.4 Linking Environmental and Economic Performances**

The most used parameters to analyse the EFA are environmental risk at the company and the industry level, environmental preparedness and an environmental performance.

- Environmental performance is broadly defined as measurable results of an organization's management of its environmental aspect (Nawrocka and Parker, 2009). The environmental performance includes compliance with laws and regulations taking measures such as investments in clean technology to abate pollution and to save energy.
- Environmental preparedness is associated with an organisation's environmental policies dealing with management aspects. According to environmental goods and services (EGS) framework, environmental performance includes:
  - Environmental policies
  - Environmental management system/organisation
  - Environmental auditing
  - Reporting environmental aspects
  - Strategy
  - Extent of the company certified to ISO 14001 series/EMAS
  - Extent of employee environmental training
  - Implementing environmental management along the value chain
  - Managing environmental risks
- Environmental risk is defined as actual or potential threat of adverse effects on living organisms and environment by effluents, emissions, wastes, resource depletion, etc., arising out of an organization's activities.<sup>13</sup> Companies in polluting industries with higher environmental risks relate to disposing larger chemicals. The opposite applies to companies with lower environmental risk. There is, however, a distinction between a general industry risk and a company's specific risk where the later is a combination of the company's environmental performance and preparedness (cf. Semenova and Hassel, 2008).

Hence, when a firm's environmental performance/preparedness is high the company's environmental risk is low. Figure 10, below, shows this relationship for the three studied companies based on environmental rating of these companies by GES (Global Ethical Standard) Investment Services.

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<sup>13</sup> <http://www.businessdictionary.com/definition/environmental-risk.html>

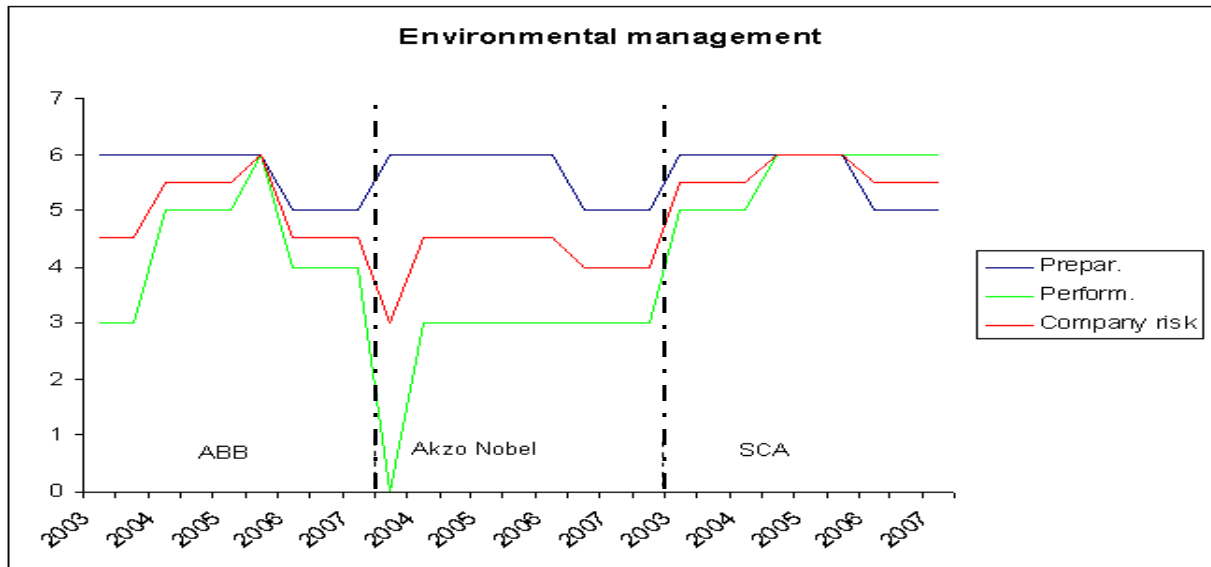


Figure 10: Rating of environmental management of ABB, Akzo Nobel and SCA as of 2003-2007. Data is retrieved from G.E.S. (Global Ethical Standard) Investment Services.

As shown in the figure, company risk is high for the 3 firms being in average equal to 5. This is an indication that the 3 companies belong to an industry with high environmental risk. Preparedness is also shown to be high in average for the 3 companies. For environmental performance the rates are higher for the SCA followed by ABB. The environmental performance in the case of Akzo Nobel is lower compared to the other companies for the period 2003-2007.

As shown, there is in the case of the studied companies no “reversed” relationship between the 3 companies since all variables i.e. environmental risk, preparedness and performance are in average in the same range during the period.

## 7 Methods for internalising intangible costs – EFA, SEM and backcasting

The Extra Financial Analysis (EFA) will, in the research project, also be complemented with backcasting and Strategic Environmental Assessment and the method for introducing external costs in planning and reviewing company goods and transports. In short the methods are described as follows:

- The backcasting method originates from the idea to start with the development of a desired, fictive and almost perfect utopian situation in the (rather far away) future, and from there going backwards to today’s situation in order to get a picture of what has to be done to reach that “perfect state”. This method is based on beliefs that future preferences are – or ought to be – similar to the current estimated costs to society.
- The Strategic Environmental Management method reveals for instance how business adapts to environmental policies that are based on national policies and/or EU directives.

Some of the most important distinctions between backcasting methodology and EFA are to assess the impact that the different time-frames and vision/targets of the two methods have which impacts on the likeness for being an effective tool for company strategic management.

## **7.1 SEM, strategic environment management**

Strategic environmental management (SEM) at the firm level is equivalent to the strategic environmental assessment at the political level. At the firm level, SEM is more than just a compliance with existing regulations. The SEM includes analysis of today's decisions as well as a future judgment of how to minimise environmental impacts within the organisation's overall management framework, both in the short and long run as well as at the local, regional and global level.

A surrogate variable to assess SEM is the corporate eco-efficiency notion. The concept of corporate eco-efficiency is a approach that reflects the environmental governance of the firm beyond that which is indicated by elementary environmental compliance and pollution control policies. Broadly, corporate eco-efficiency can be defined as creating more value with fewer environmental resources resulting in less environmental impact (for example, less pollution or natural resource exhaustion, Guenster *et al.*, 2006).

Based on Asset4 data, eco-efficiency may be calculated for the three firms of this study – ABB, Akzo Nobel and SCA – at the company levels, see figures below. The eco-efficiency we apply is calculated as the average of the variables defined as follows:

- Resource reduction: efficient use of natural resources in the production process
- Emission production: Reduction of environmental emissions during production and operational processes
- Product innovation: Effectiveness towards supporting R&D of eco-efficient products and services.

Looking at these definitions they correspond to the definition of environmental performance discussed above. It is however not easy to compare the Asset4 results with the GES rating based on the fact that Asset4 data is relative to a benchmark i.e. the data does not rate the company's environmental performance *per se* but the rating is relative to a benchmark where this variable depicts an average value for the studied industry or the chosen benchmark of the user. One benchmark is the entire Asset4 universe containing some 2,900 companies (extracted the largest firms within MSCI World).

Eco-efficiency is high compared to the benchmark in the case of ABB. The eco-efficiency is, furthermore, dominated by product innovation in this case were the scores are in average much higher than 90, see figure 11 below.

The scores for emission and resource reduction performance at ABB varied during the studied period, but also those ABB scores beat the ABB benchmarks. This is in line with the reported results in section 12.3 on what environmental aspects the financial analysts write the most about when analysing ABB, namely, the efficiency of ABB's product portfolio in meeting its customers' demands as well as the legislation meeting its customers.

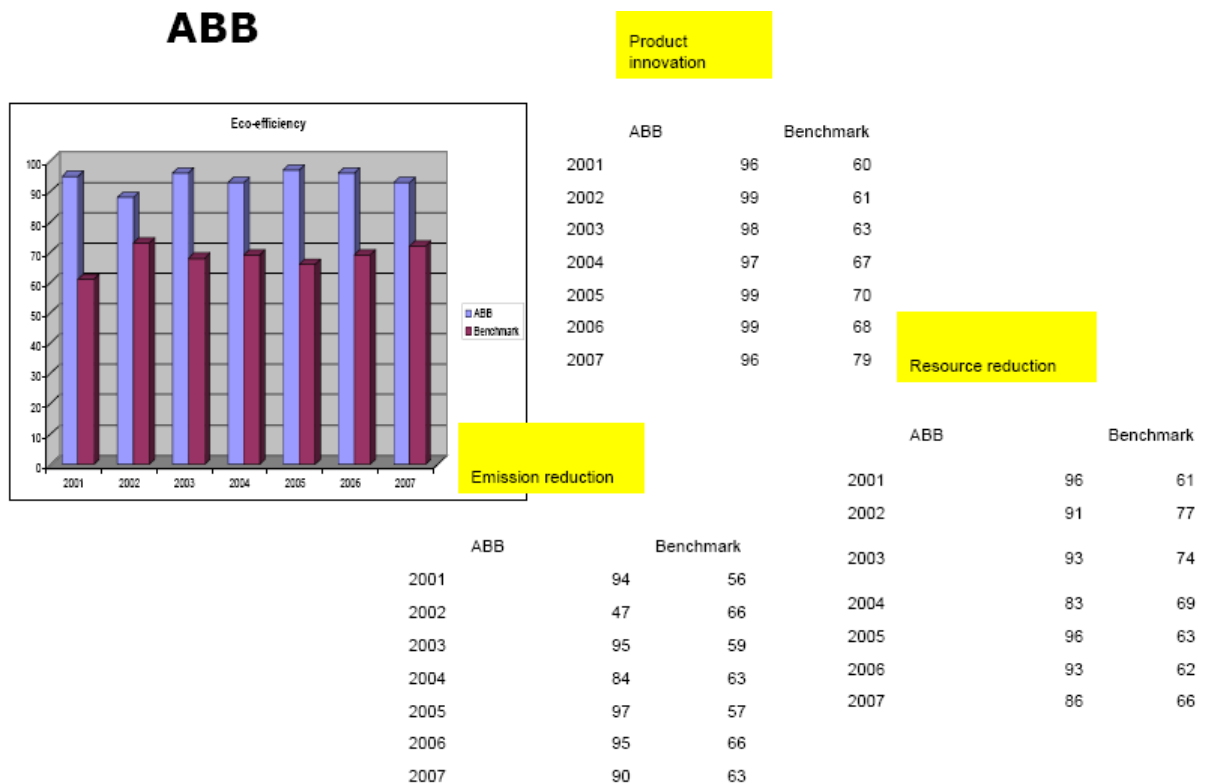
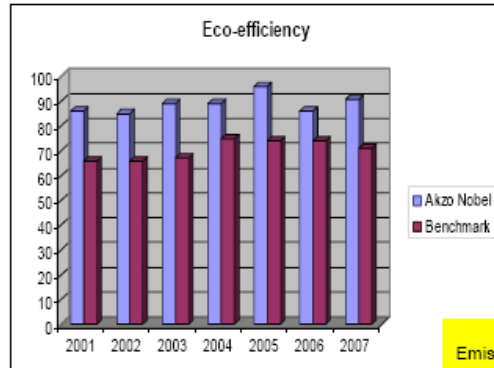


Figure 11: ABB Eco-Efficiency measures compared to its Industry benchmark as of 2001-2007. Data is retrieved from Asset4 Q1:2009.

In the case of Akzo Nobel, figure 12 below shows the corporation's scores associated with eco-efficiency. In all years, emission reduction, resource reduction and product innovation are higher than the Asset4 benchmark except for emission reduction during 2001, product innovation 2006 and resource reduction 2002-2003.

## Akzo Nobel



Resource  
reduction

	Akzo Nobel	Benchmark
2001	86	57
2002	49	61
2003	58	59
2004	69	68
2005	96	70
2006	71	70
2007	81	66

Product  
innovation

Emission  
reduction

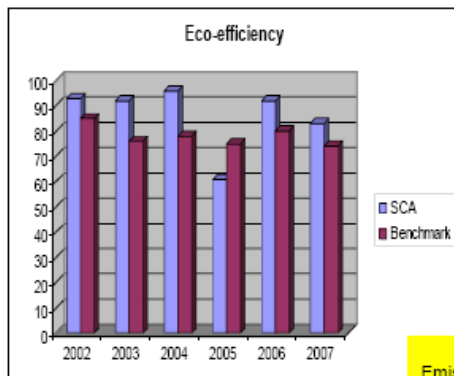
	Akzo Nobel	Benchmark
2001	58	64
2002	95	60
2003	96	66
2004	84	72
2005	93	69
2006	97	68
2007	89	66

	Akzo Nobel	Benchmark
2001	94	71
2002	81	64
2003	90	65
2004	90	67
2005	96	72
2006	65	71
2007	95	71

Figure 12: Akzo Nobel Eco-Efficiency measures compared to its Industry benchmark as of 2001-2007. Data is retrieved from Asset4 Q1:2009.

Although the scores pertaining to eco-efficiency, see figure 13 below, vary in average for the studied years in the case of SCA, these are in general higher than the benchmark except in year 2005 which is characterised by the immensely low score for emission reduction that year.

## SCA



### Resource reduction

	SCA	Bench mark
2002	89	79
2003	82	66
2004	86	71
2005	95	74
2006	84	75
2007	71	66

### Product innovation

	SCA	Bench mark
2002	71	82
2003	80	74
2004	97	76
2005	21	75
2006	89	76
2007	86	74

Figure 13: SCA Eco-Efficiency measures compared to its Industry benchmark as of 2001-2007. Data is retrieved from Asset4 Q1:2009.

## 7.2 Backcasting (BC)

Is a method in which the (long term) future desired conditions are envisioned and steps are then defined to attain those conditions, rather than taking steps that are merely a continuation of present methods extrapolated into the future? As discussed in SEM is a part of the environment management.

Depending on limited resources in this project, the plans and targets of the firms as well as the process to reach these are not studied in details. However, an example of backcasting in the case of SCA is the following declaration from in the SCA Sustainability Report 2008: “SCA will reduce its emissions of carbon dioxide from fossil fuels and purchased electricity and heating, in relation to production level, by 20% by 2020, using 2005 as a reference year”.<sup>14</sup>

## 7.3 Relationship SEM, EFA, BC

The relation between the three elements SEM, EFA and BC is depicted in figure 14 below. A well conducted SEM would contribute to EFA meaning that good environmental performance induces higher make value of a company and/or an industry. On the other hand an efficient development

<sup>14</sup> [http://www.sca.com/Documents/en/Env\\_Reports/SCA-hr2008-ENG\\_FINAL.pdf](http://www.sca.com/Documents/en/Env_Reports/SCA-hr2008-ENG_FINAL.pdf)

strategy and well formulated and published plans to reach e.g. higher environment performance would impact on EFA.

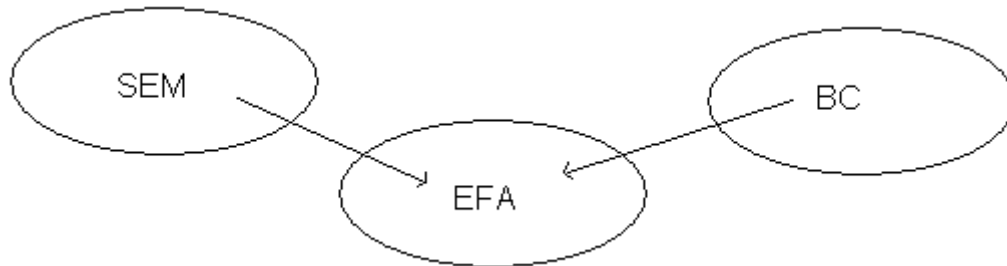


Figure 14: Picturing how Strategic Environment Management (SEM) and Back Casting (BC) can feed in to Extra Financial Analyses (EFA).

A time series data for the studied companies on SEM including environmental investments to comply with regulation would have been of high importance to analyse the relation between SEM and EFA. However, based on limited data these analyses are not possible in this project. Furthermore, a data on strategies and goal would have been important in the analysis of the relation between BC and EFA. Depending on these limitations within this project the relation between SEM, BC and EFA are studied indirectly using finance data.

#### ABB

In the case of ABB, figure 15 below shows the relationship between return on assets (ROA), operating profit margins as well as foreign sales as % of all sales for the period 2003-2007. As shown the growth rate of all variables during the studied period is high. This tendency is in line with environmental performance shown in the figure on environmental management for the ABB case. However, the growth in the financial variables are not in line with the tendencies shown in the section dealing with SEM – see figure 11 – where environmental performance including emission and resource reduction in the case of ABB is not positive for the studied years. For instance emissions have increase between 2003 and 2004 as well as for the period 2006-007.

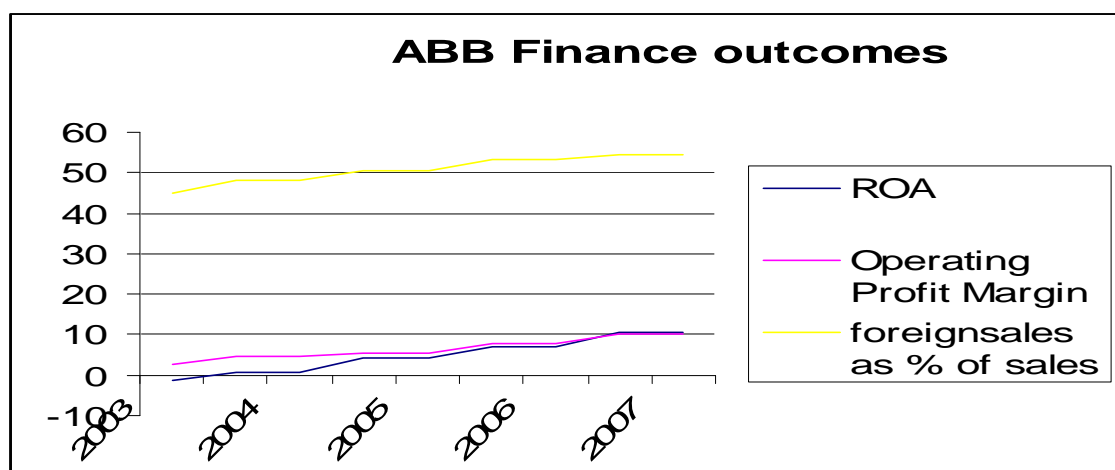


Figure 15: ABB Financial Outcomes as of 2003-2007.

Going back to backcasting in order to find impacts of plans and targets on EFA this task is quite difficult since data on set quantifiable targets are not available in the case of ABB.

Hence, although there are hints of the existence of a relationship between the three variables SEM, BC and EFA in the case of ABB, the lack of specific data to make the analysis makes it is not easy to unambiguously study the relationship between these variables.

#### **Akzo Nobel**

Figure 16 below shows how ROA, operating profit margin and foreign sales as % of all sales have developed under the period 2003-2007. Until 2006 the growth rates of ROA and operating profits were almost constant. During 2007 the level of ROA is more than 5 times higher than the average level during the period 2003-2006. However, this increase it is sure is not dependant on whether environmental nor financial performance. This is because, on the one hand, the sales decreased from around 13 billion USD in 2006 to around 10 billion USD. On the other hand, environmental performance based on emission and resource reduction has not been very high – see figure 12. Hence, the high jump in ROA cannot be explained by finance or environmental performance although the environmental management has been significant as shown in the EFA section. Nevertheless, the high increase in ROA should depend on other variables. When it comes to foreign sales these have increased until 2005 and show a tendency of decrease until 2007.

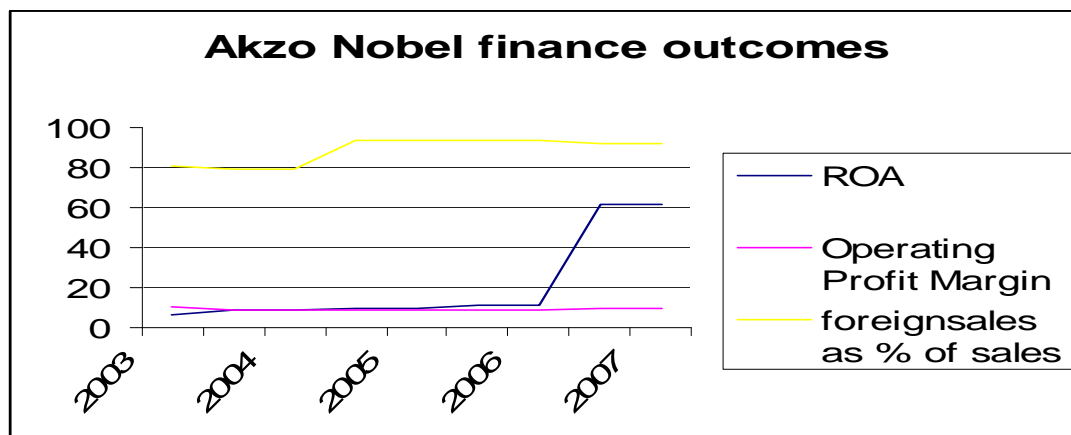


Figure 16: Akzo Nobel Financial Outcomes as of 2003-2007.

However, in the case of Akzo Nobel the relationship between the studied variables is not straightforward.

#### **SCA**

While foreign sales as % of all sales have increased since 2003, the growth rates of ROA and operating profit margins have been negative as shown in figure 17 below.



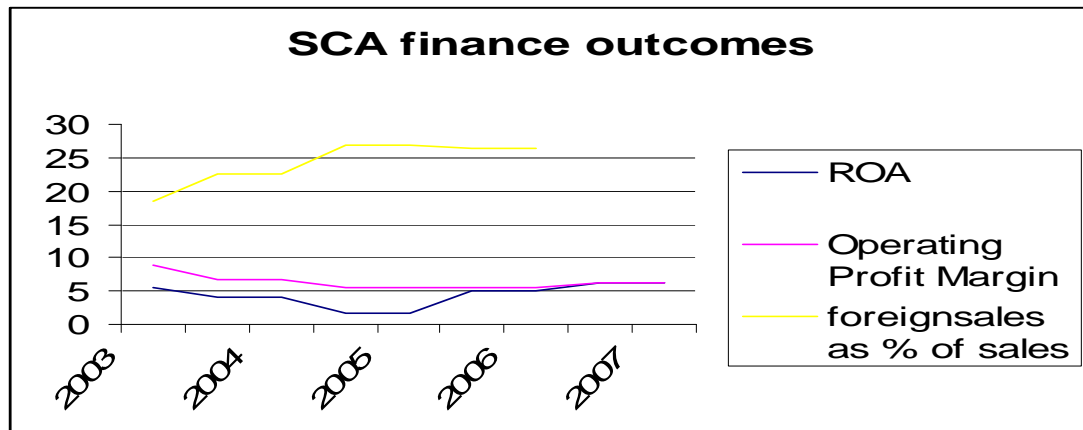


Figure 17: SCA Financial Outcomes as of 2003-2007.

On the environmental performance including resource and emission reduction and product innovation there is no trend in the case of SCA. As shown in the SEM section resource reduction for instance is higher in 2003 compared to 2007 – see figure 13. Similarly, emission reduction is higher in 2004 compared to 2007. For product innovation this variable almost decreased during the period 2003-2007.

When it comes to targets and plans, SCA has set ambitious targets for water use and the emissions of BOD to water as shown in the appendix.

Based on the available data, it is complicated to find any relationship between the studied variables in the case of SCA.

## 8 Exploring the expressed views of some financial actors

There exist a few studies that have explored the views and actions of some key actors in the financial community. One author behind some of these is Peter Norberg at Stockholm School of Economics who has dug into the private rooms, including their views on family chores and degree of spouse-support in thereof, of the financial players in Stockholm. Norberg (2001) in *The amorality of the Financial Market and the Calvinistic Church Space*<sup>15</sup> describes a culture in this financial community as being tensely focused on best possible income from capital. He asks if greed is the immoral behaviour likely to lead to success?

Norberg continues by stating that greed is fundamental to the mentality of financial markets, which is important for the formation of incentives to employees in high finance. One aspect that he touches upon is the role education plays in forming the culture of behaviour in the financial markets. He discusses, furthermore, how higher education in economics creates the strong trust in the efficiency of the economic invisible hand and in the justice thereof. The mainstream education curricula taught in the most prominent business schools are also discussed by Caruth *et al.* (2006) as being a problem for implementing change in society and decision-making. As discussed, the sole focus on the neoclassical theory in the economics curricula is seen as deficient to provide the students with an understanding for change in industries and society. Caruth *et al.* (2006) advocate to complement the curricula at prominent business school with better understanding in industrial dynamics, ethics *et cetera*.

During 2005 and 2006 some good 100 interviews carried out by Swanström and Cerin (2006) among ABB's stakeholders asking for their views on ABB's handling of environmental and social aspects. The stakeholders included in the study were identified as vital to ABB either economically or environmentally. These stakeholders of the study incorporate actors downstream ABB's value chain, ABB's customers. Also actors within ABB are included like its account managers, responsible for sales to large customers, and ABB's country sustainability managers, one for each country in which ABB is present, responsible for environmental and social aspects of ABB's local operations. Two groups of academia were interviewed, one enthusiastic group developing the environmental management and analysis tools for industry and one mainstream accounting group being more lukewarm toward the economic but also environmental benefits of such tools.

Then the investors in the financial community were interviewed and engaged discussions were held with SRI (Socially Responsible Investments) analysts. SRI functions were interviewed at both the interview respondent group "Finance SRI Advisor" – which may be denominated sell side SRI-analyst – and at respondent group "Finance Banks" – which can be characterised as SRI investment organisations. At another respondent group "Finance banks" Swanström and Cerin (2006) tried to interview the portfolio managers of e.g. global ethical funds who surprisingly had immense difficulties to answer the questions that were put to them. To a vast number of the questions given to this respondent group were simply replied by them with a short passing: "Don't know." Instead a very general discussion had to be carried out with persons within this function which couldn't be incorporated in the diagrams (See figure 18 for one example) with the responses from the other respondent groups. These mainstream investors, even though some of them were ethical fund

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<sup>15</sup> Our translation from Swedish.

managers, had very strong opinions about environmental issues, oftentimes of very general character, and these respondents weren't shy to express them either. Below is an excerpt from these mainstream investors' replies in Swanström and Cerin's (2006) report to illustrate the strong aversion that the members of the "Finance banks" respondent group expressed:

These fund managers, included in the study, do not make ethical or sustainability screens and are not at all involved in the process as explained by one fund manager for an ethical fund: *"We receive a list on which companies that are okay. Those not included are not invested in. In our own financial analysis we are concerned with revenues and cash flows."* Therefore, in the study, these ethical fund managers are placed in the group of mainstream financial analysts and portfolio managers, namely, the Finance Port Mgr/Analyst respondent group.

We retrieved several indications that financial analysts are not accustomed to environmental and social issues in their daily work. A financial analyst of a larger bank in the study has the responsibility to evaluate ABB for several segments of the bank. This analyst stated that *"We do not pay attention to environmental and social aspects"* in our analyses. Sustainability – environmental and social – issues are for a financial analyst of an ethical fund somewhat remote since as he explained *"We do not conduct any analysis ourselves on these matters. XXXX makes the analysis to [NAME OF THE BANK] Ethical analysis. We do not look for companies that are pro-active on environmental and social issues. We receive a list on which companies that are okay. Those not included are not invested in. In our own financial analysis we are concerned with revenues and cash flows."* Another fund manager for an ethical fund in another company in the financial sector stated that: *"I have no knowledge about how to make environmental and social evaluations."* and that *"I do not think companies' work with environmental and social issues have any effect at all. I get no information from the ethic screeners at [NAME OF THE COMPANY]. That information goes only to our ethical [SUB-COMPANY]. We are not comprised by the ethical screeners."* He then continues to explain the value of information from stock exchange companies on their own handling of their extended responsibility *"I receive sustainability reports from ABB, but I cannot spend time reading such matters."* The ethical fund manager concludes that *"The only thing a care about is to get the highest returns possible."*

Swanström and Cerin (2006)

Besides, these portfolio managers, were the most difficult respondent group to get hold of in the Swanström and Cerin (2006) study. They were protected from any approaches from the world outside the organisation. The common response when they noticed anyone got a hold of them was:

Mainstream financial actor – respondent X:

*"How have you been able to find us? You should not be able to get hold of us. We are an internal unit. We have Client Relationship Managers that shall deal with external contacts. We have a, Client Relationship Manager that is responsible for ABB."*

Mainstream financial actor – respondent Y:

*"How have you managed to get a hold on us? You are not supposed to be able to get hold on us. We have a unit that is handling customer contacts. Call our client relationship managers instead."*

Swanström and Cerin (2006)

So, there was an anxiety among the portfolio managers to really display their (foremost negative) views on environmental and social matters. If their knowledge about environmental and social issues would have been more profound, then this group's answers would most likely increase the spread in the answers provided by the different respondent groups.

If now taking a look at the one question in the Swanström and Cerin (2006) study as an example on how differently the different respondent groups would answer the questions, or rather normative claims, put to them. We can see that the answers may differ considerably between the different respondent groups. As can be detected in figure 18 below the respondent groups *“Finance SRI Advisors”* and *“Academia Accounting/Investment”* are considerably less positivistic to the corporate engagements in issues such as environmental management systems, environmental analyses tools and commitment to international initiatives.

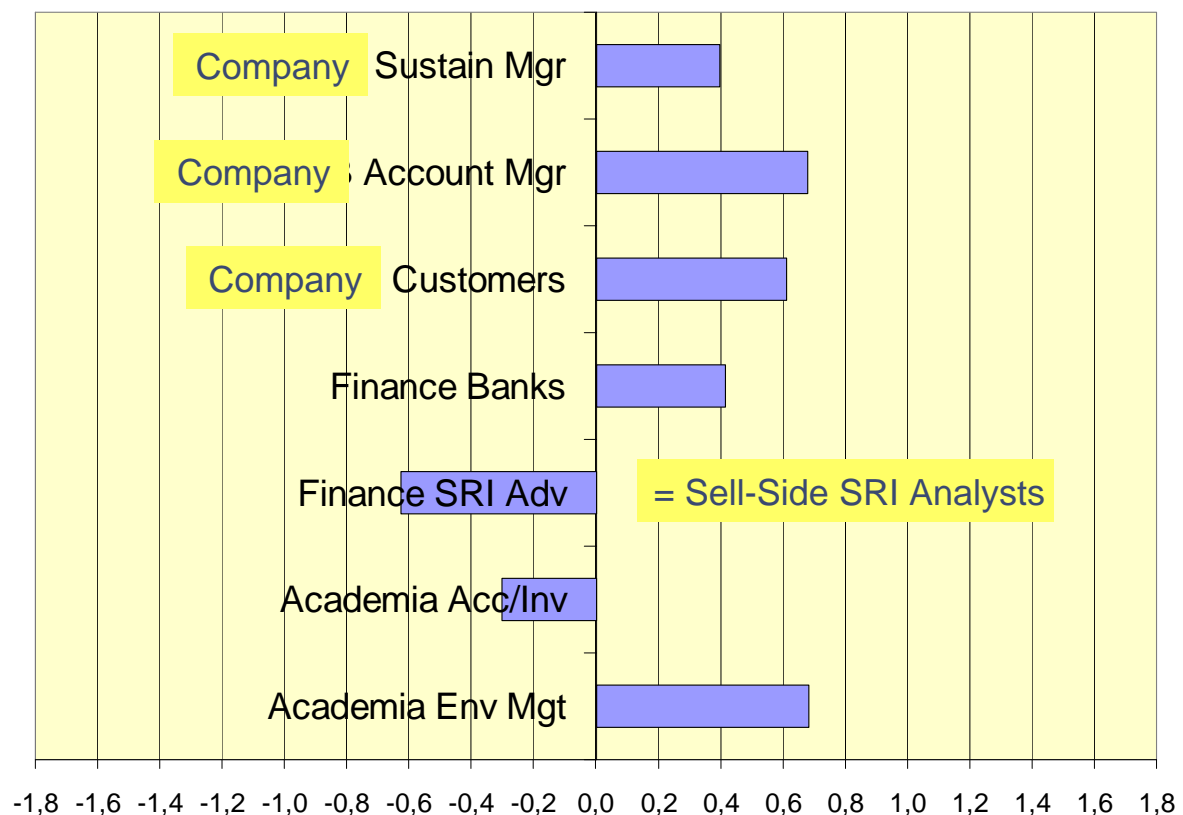


Figure 18: Respondent groups' answers to the normative question: Companies with an expressed commitment to the principles of the UN Global Compact are more responsible corporate citizens that perform better socially and environmentally. The stronger respondee positive answer the stronger agreement and, consequently, the stronger negative answer the stronger the disagreement. Modified, from Swanström and Cerin (2006).

This in figure 18 identified (in some cases) lukewarm interest among financial SRI advisors in initiatives by firms to improve corporate handling of environmental and the expressed aversion to the same by mainstream analysts and portfolio managers raises important questions regarding what information would these actors need. Do financial SRI advisors understand and fully realize the consequences of neglecting environmental aspects, are they analysing firms in a way that corresponds with the views of people within the analysed industry?

A study by PricewaterhouseCoopers (Hummels and Wood, 2005), recognises the value of extra financial information in corporate reporting, especially issues linked to quality reporting. In their study, though, the lion-part of the financial analyst respondents stayed sceptical to the value of social, ethical and environmental information. The general claim by these analysts is that social, environmental and ethical information does not play a (major) role in their financial valuations. The fundamental reason for this claim, the analysts argue, relates to the reservation they have regarding the sincerity with which companies report on these aspects – social, ethical and environmental. They are, furthermore, concerned with the quality, or lack thereof, by which information on these issues are reported on. Below are some responses by respondents, from Hummels and Wood (2005) study, that serve as representatives for these arguments:

*'It is difficult for a company to talk about this kind of information. I don't trust them. They publish a lot of reports but I don't believe it.'*

*'I have to trust what they say. A company is there to earn money, so you have to read it with a mature mind.'*

*'I am sceptical about what companies tell me and I find it hard to verify what is true.'*

One conclusion from these comments is to call for more stringent roles on how to disclose extra financial information, such as by international initiatives like Global Reporting Initiative (GRI), regulation and the verification of these reports. The PricewaterhouseCoopers study, by Hummels and Wood (2005), recognises the importance if these reports on environmental and social matters are written by an accountancy firm.

Analysts tend to ignore issues that may be important to others than shareholders, since the financial analysts express their focus is to deliver information that concerns strictly financial matters and outcomes as displayed by these responses in Hummels and Wood (2005) below:

*'Of course it is important for a business that employee satisfaction is high. But there is simply no direct relationship between employee satisfaction and the interests of shareholders.'*

*'Very often SEE [Social, Ethical and Environmental] issues are incidental. We don't take them into account.'*

*'No, we don't look at this information – not if you are focused on valuation issues. That also applies to environmental issues.'*

*'No, it is a strictly financial matter.'*

*'...not enormously - only if it will directly impact on a company's performance. That can be the case, if the issue relates directly to people's perception of the company's'*

These comments by financial analysts are in essence indeed similar to the ones found in Swanström and Cerin (2006) as discussed above. There exists, however, studies that examines the relationships between the financial performances, on the one hand, and the social, ethical and environmental aspects, on the other. E.g. Semenova and Hassel (2008) have detected a positive correlation between the environmental performance of firms and the firms' market premium (Tobin's Q) while the correlation between the environmental performance of firms and firms' return on assets is dependent on whether the firm belongs to an environmentally low risk industry, where the

correlation is positive, or if the firm belongs to an environmentally high risk industry, where there exists a negative correlation between environmental performance and return on assets (ROA).

When applying aggregate measures on social performance Semenova *et al.* (2009) have identified a negative correlation to firms' financial performance. When disaggregating the heterogeneous social indicators used in the study into the compounds of social performance on stock returns they find that the community and supplier indicators are positively related to market value. Furthermore, the study finds a positive correlation between environmental performance and market value. the study's concluding remarks include that *"companies with higher environmental and social performance tend to achieve higher returns, while companies with the lowest scores underperformed the market."* Other studies carried out supporting the existence of positive relationships between environmental and social aspects, on the one hand, and financial outcomes, on the other, like return on assets, premium value (on stocks) and cost of equity capital (for lending) are e.g. Guenster *et al.* (2009) and Derwall and Verwijmeren (2008).

So there seem evident that there exists a value of handling environmental and social aspects as well as the information thereof, according to the above mentioned article – among others – which is information that is not really permeated in the responses by the financial analysts. In an incident study by Lundgren and Olsson (2008) *"How Bad is Bad News? Assessing the Effects of Environmental Incidents on Firm Value."* it is found that firms with better environmental scoring (according to G.E.S. Investment Services) have less negative affects on their firm value when the company is allegedly in violation of international norms on environmental issues – an incident.

The financial analyst respondents in the Hummels and Wood (2005) study show that they have a risk perspective approach if they include environmental or social issues in their assessments to hamper negative effects on firm value from regulation (a longer term perspective):

*'We look at non-financial factors that could lead to lawsuits or regulatory penalties. They are, however, difficult to track.'*

*'We ask SEE-related questions from a risk perspective. (...) so, for instance, what is the risk of losing a concession?'*

*'If a company has a huge exposure, then I won't even bother with them. I've avoided companies specifically on this issue. As a long-term quality growth analyst, I can't invest in that.'*

But, for incidents the analysts may pay more attention to extra financial aspects, depending on the analysts' perceptions of their clients' perspectives on Social and environmental responsibility Hummels and Wood (2005). Currently the analysts argue that the mainstream investors do not pay much attention to social, ethical and environmental performance of a firm which even though the incidents constitute a short term perspective when considering stock prices. The socially responsible investors, however, stand out for their active interest in the subject. Here are some examples on the respondents' views:

*'Investors ask only in times of crises'*

*'Investors only ask those questions when it seems to be an issue that consumers might react to.'*

Furthermore, if looking at more severe environmental and social incidents, often referred to as crises wholly or partly caused by firms is from a valuation point of view seen as less interesting. This is because they are yesterday's news that do not structurally change the price of the analysed

firm, if the firm has its management of these aspects in place and can deal with them accordingly when they occur. See, e.g. following responses:

*'Take a company like Dutch pharma and chemicals giant DSM. They have had an explosion in one of their plants and they handled that very well. They were transparent about what had happened. But in the end it did not affect the share's price target.'*

*'SEE information would never ever influence our financial perception of the company. Take Abold. You know that companies recover from these things.'*

*'We do not believe they have long-term influence on performance. The response to the incident is far more important than the incident itself.'*

*'Immediately, it has a short-term effect on stock; then long-term you consider legal liability, legal exposure, as a result... it is much harder to gauge the legal liability and long-term implications.'*

A survey based study (cf. Bauer, 2008) conducted by European Centre of Corporate Engagement (ECCE) on the views of the staff at one of Europe's largest investment banks on various ethical issues showed that, in general, the employees were at least fairly concerned with issues like pornography, munitions, gaming, tobacco and alcohol – see figure 19.

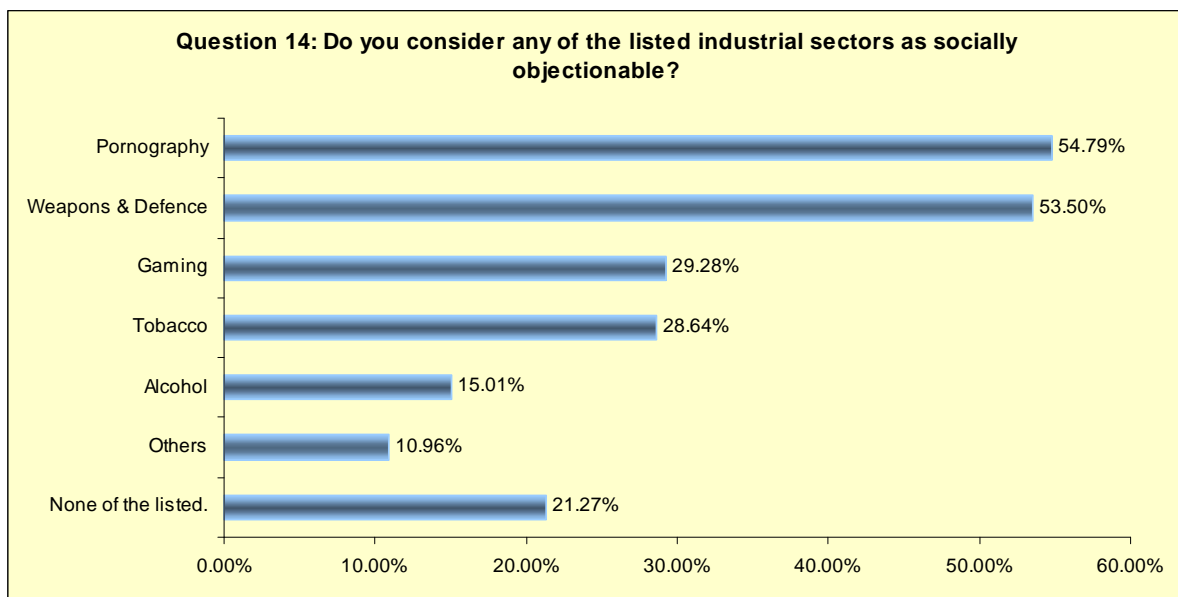


Figure 19: The views of a large European investment bank's staff on which industrial sectors they consider to be socially objectionable, retrieved in a study by European Center of Corporate Engagement (Bauer, 2007).

This representation of objectionable concerns of the investment bank's employees in figure 19 does not really tell us how the investment managers and analysts, influencing their investment decisions, consider these aspects. For this reason the ECCE researchers have divided the answers retrieved in this study into different respondent groups; one containing the investment professionals and, thus, the people that really influence and decide upon what stocks to invest in. The other respondent

group constitutes the rest of the employees of the investment bank. The results are astonishing in pointing out the considerably lesser concern for social and environmental issues among the investment decision makers, see figure 19.

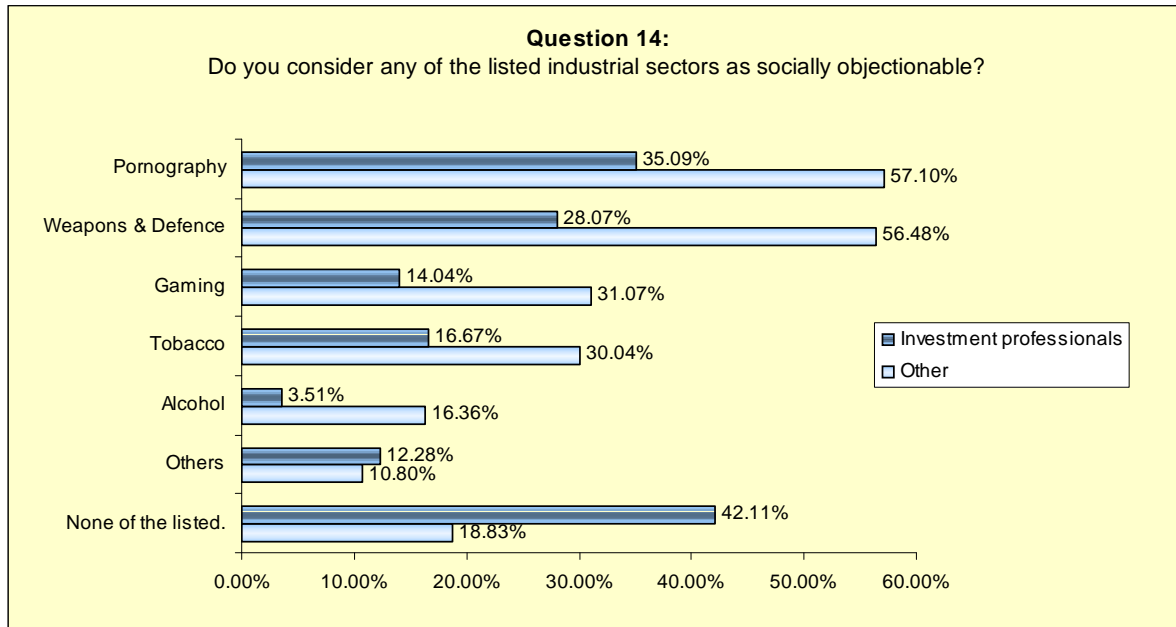


Figure 19: The views of a large European investment bank's investment professionals and other staff on which industrial sectors they consider to be socially objectionable, retrieved in a study by European Center of Corporate Engagement (Bauer, 2008).

As depicted in the table above merely one third of the investment professionals in the investment bank considered pornography (in the ECCE study referred to as an industry sector) to be socially objectionable. Munitions wasn't a big issue either, for not to mention the gaming, tobacco and alcohol sectors which all within the investment professionals respondent group had about half as many (in percentage of total answers within the group) considerations as objectionable compared to the rest of the investments banks employees. Not only do the investment professionals stand out in the investment bank for considering pornography, munitions, gambling, tobacco and alcohol as less offensive compared to the rest of the staff within the bank, but the investment professionals are also, according to the survey, less conscious and active regarding their energy usage, waste recycling, green products, union memberships, support to NGOs as well as lesser weight on green investments. These differences are shown in figure 20.



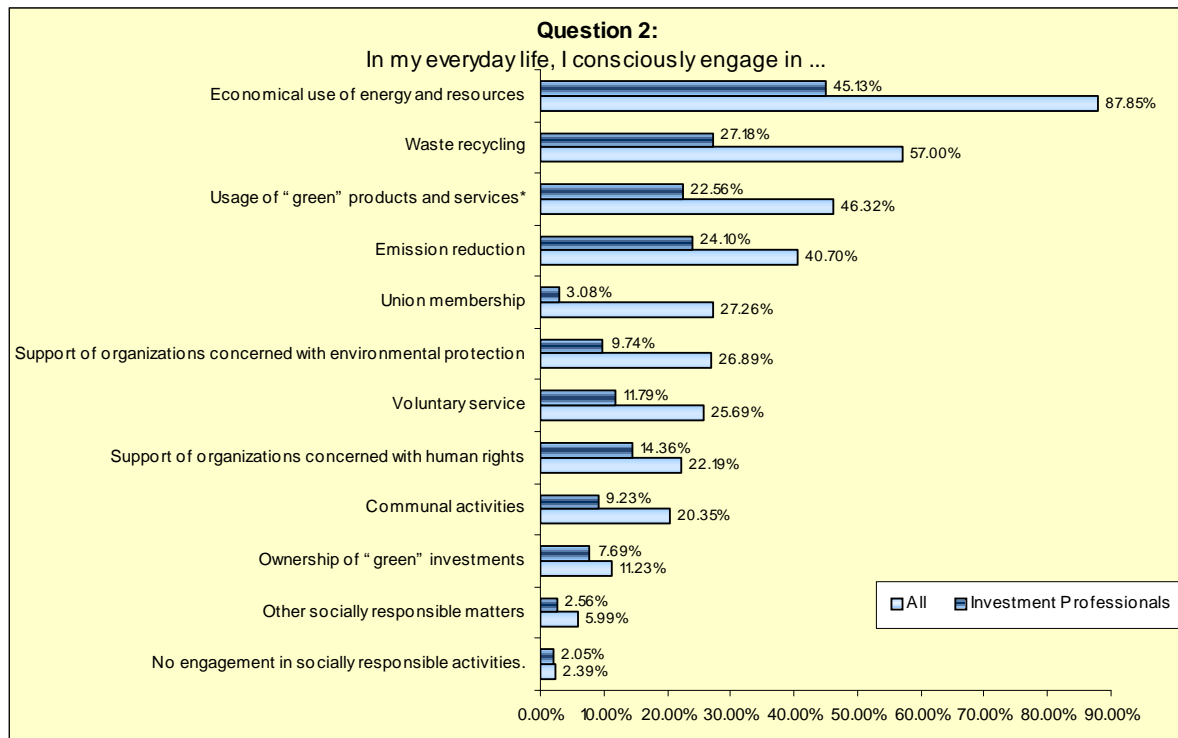


Figure 20. The views of a large European investment bank's investment professionals and other staff on which environmental and social aspects the engaging in, in their everyday life, retrieved in a study by European Center of Corporate Engagement (Bauer, 2008).

Other differences in views of which sectors are objectionable as well as their own personal everyday consciously engagement into environmental and social well doing is found among the employees' demographic characteristics such as gender, income and age. The ECCE researchers found that females tend to be more sensitive and responsive towards corporate social responsibility (CSR) and socially responsible investments (SRI) than men. The expectation on the fund's handling of CSR/SRI aspects increases with age of the employee. Higher income, however, goes with lower acceptance of incorporating social screens when selecting funds.

In all these demographics areas we can see an asymmetry towards the less caring for social and environmental aspects in the investment professional staff compared to the investment bank's other staff. These differences in views and demographics, as identified in the ECCE study, are important aspects to investigate further to create an understanding on how they may affect the considerations towards the environment and social aspects in investment decisions. The other, and closely related topic, is to explore the educational background of the investment professionals that may partially foster these actors into a certain mindset, culture and values that may or may not be in harmony with the surrounding society (cf. Norberg, 2001; Caruth *et al.* (2004).

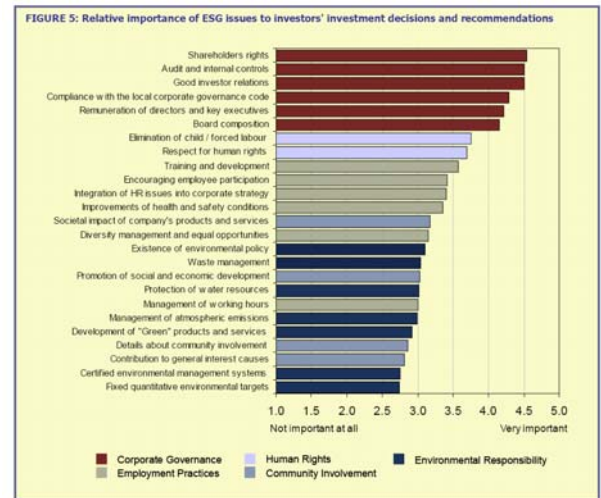
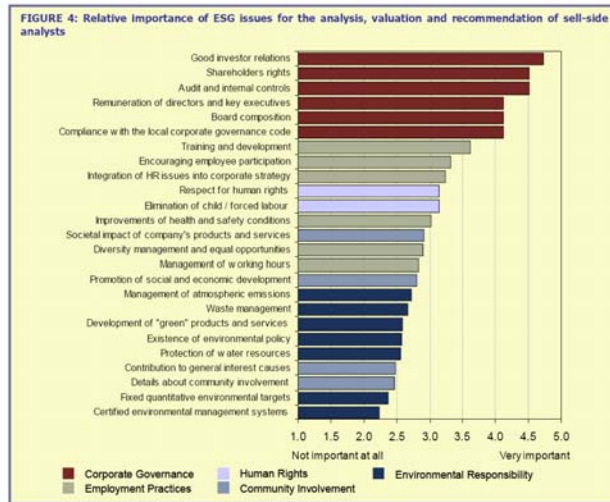


Figure 21: The relative importance of ESG aspects for sell-side analysts' analyses and recommendations and investors' investment decisions, retrieved in a study by European Center of Corporate Engagement (Bauer, 2008; Koedijk, 2008).

Norberg (2001) points out that if the dominating actors (the investors) in the market for information disregard certain types of information as relevant, it may be difficult also for the supporting function (the analysts) to acknowledge these aspects too, and consider those in the financial analysis processes. As seen in the paragraphs above the investors stand out as not particularly interested in ethical issues and as Söderbaum (2002) discusses: It may take time for reluctance among individuals towards new information to eventually diminish. From this perspective, it is certainly interesting for sell-side analyst to know the knowledge interest of their customers i.e. the investors. One global interview study, see figure 21 above, interviewing sell-side financial analysts and investors all around the worlds on their views on ESG (environment, social and governance) issues found that, in general, the investors considered *Environmental Responsibility*, *Community Involvement*, *Human Rights* and *Employment Practices* to be more important to their investment decisions than the analysts considered these ESG issues to be important for their analyses, valuations and recommendations. Both these respondent groups gave the same weight to *Corporate Governance* in importance to their respective work chores. Both groups paid most attention to *Corporate Governance* and then in a descending scale attention to A) *Human Rights* and *Employment Practices* and then least attention to B) *Environmental Responsibility* and *Community Involvement* (Bauer, 2008; Koedijk, 2008). So, from a sell-side analyst point of view there is apparently a greater demand for the inclusion of ESG information in the Sell-Side analyst reports than what is currently included. If we refer back to Söderbaum (2002) above indicating that it takes time to change the perceptions of actors it would be fairly easy to increase the amount of ESG information in the financial analyst reports without losing credibility of being too inclusive of issues not really relevant for estimating firms' future profitability. This is also a positive aspect for actors concerned with corporate responsibility and steering society's investment resources into businesses that take these aspects into account. However, it is worth to keep in mind that interest of some of environmental and community issues is not that high for any of the groups in their professional work.

## **9 Exploring the variation between ESG ratings as well as ESG information in financial analyst reports**

### **9.1 Exploring the variation in ratings and assessments of firms' handling of social and environmental aspects**

Even though firms themselves have no intention to display how they are handling ethical, social and environmental aspects they can be certain that someone else will, but from the outside-and-in. These external assessments of firms lack vital internal information about the firm and do therefore have to make models for, in the best manner, to reflect the vital aspects of the firm which in this study concerns environmental and social issues. One problematic issue for actors carrying out these assessments concerns the outside-and-in valuation of firms' environmental, social and governance aspects since there are no determined rules and principles for what to measure and no determined rules for how to compare firms on these issues. Of course, the different ways of measuring firms in financial assessments are problematic and depending on the outside-and-in assessments, the financial appraisal of firms is heavily supported by indeed tight legislation and some standards. The room for creative solutions when assessing firms are limited compared to the evaluation of firms dealing with ESG aspects. We, thus, see a wide variety in how firms have been assessed e.g. concerning environmental aspects and how those are affected by the firm or how those – visa versa – affect the firm.

For the firms being analysed the inconsistency in assessments of them by external actors is not always that easy to grasp or to really accept. Even assessments from one and the same ESG analyst, rating or investment firm can vary considerably, placing firms very differently when rating a whole industry. SAM (Sustainable Asset Management) is one example on how on actor can rate companies from one sectors quite differently even though the assessments are carried out the same year.

SAM is the company behind Dow Jones Sustainability Index (DJSI) and they have a stab of people working for them in India compiling information fetched from the questionnaires sent out to the companies and then mitigating the processed information through to the indexes and products of SAM like Dow Jones Sustainability Index and Dow Jones Sustainability Index STOXX. The DJSI was launched in 1999 and was indeed well accepted all around the world as a stepping stone towards making the inclusion of sustainability aspects in investments more mainstream. Some articles, however, criticised the claimed superior performance of DJSI as mainly being based on biased industry selection (Cerin and Dobers, 2001a) as well as the environmental aspects included (Cerin and Dober, 2001b). According to Cerin and Dobers the index should focus far more on the environmental performances of companies' products and not foremost on companies' environmental management systems.

In SAM's DJSI, released the fall of 2002, the auto industry sustainability leader was appointed the Volkswagen group and the two other top firms in DJSI STOXX were BMW and Daimler Chrysler (the owner of Mercedes). The sustainability leader score was based on three parts being Environment, Social and Finance. In the very beginning of 2004 an assessment of the auto industry

was launched by SAM in cooperation with WRI (World Resources Institute) named “*Changing Drivers*” which analysed how future carbon dioxide constraints will affect the corporations in the auto industry. The assessment was quite forward looking, taking into account that approaching carbon related legislation – in Europe, Japan and the USA – will affect the auto industry until 2015 if implemented (SAM and WRI 2004).

In the SAM and WRI joint study on the auto industry BMW received a poor placement while Toyota got a top position. The assessment includes not only the risks from high emitting products but encompasses also a valuation of the strategic management of the firm (cf. SAM and WRI. 2004). The assessments and placing/rating of firms in the auto industry do not cover the same aspects. The scope in WRI and SAM study merely deals with carbon emissions from the products (and relating society policies and corporate strategies) while the SAM rating deals not only with environmental aspects, but also with social and economic. Crucial for the survival of firms in the auto industry is, however, how they deal with emissions of greenhouse gases and if just looking at DJSI's environmental scoring per auto firm we see that firms that are performing lousy to its industry peers may in fact have the top placement in the carbon focus study “*Changing Drivers*” by WRI and SAM.

There are, furthermore, other actors in society who will compare and try to assess the environmental and social performances of firms and their products sold, including the internet world wide web, which may make the impacts on business even greater. One such initiative on the web is BadBuster – [www.badbuster.com](http://www.badbuster.com) – that collects the analyst scores on environmental issues from different initiatives that is publically available on the internet and aggregates them into a combined score for the firm in question – by using a percentage scale for all individual assessments of the company before summing them up – and compares the sum to its company peers. Depending on how well the company performs the aggregate score is then given a green, yellow or a red light. All industry peers are also given this colour code for their aggregate scores.

For those who sign up to the free BadBuster software each time an analysed firm is printed on any web page the score colour will be visible in the web browser window and when clicked on the individual scores of the various actors constituting the aggregate score will be displayed and explained, but these scores are also made comparable to the analysed firm's industry peers. So, the BadBuster score is composed without making any own judgements and the persons surfing the web having BadBuster in their web browsers will get these composed environmental scores for each company every time it is mentioned in a web browser. This makes an imprint on people surfing, by constantly being exposed to these those outside-and-in evaluations of firms by influential ESG raters of which some are NGO's. On this, the exposed companies in question have little power to influence, except by attempting to steer the debate towards those aspects the company is beneficial for its business (cf. Cerin, 2002a). These publically assessment initiatives (of which some are intended for the financial community) are present and budding in today's 'information society' and there is little the firms can do about them, no matter how faulty the firm may consider them to be. It is therefore, vital for firms to retain a better knowledge how they are assessed by these actors.

By looking into different environmental assessments (that is two assessments made by two different organizations that both use their own methodology) of two companies in the same sectors constituting the BadBuster scores, we see that these different rating initiatives are not necessarily pointing in the same directions and their scoring result are not coherent to each others. This is truly evident for the case of the environmental assessments of BMW and Honda. On the aggregate level, when summing up all the individual assessments (made by the different raters), Honda receives an environmental score that is somewhat better than BMW, with 59 percent and 54 percent,

respectively (see right hand column in figure 22). If we, however, look at the environmental scores produced by the individual analyst organizations for these two firms the picture becomes a little bit convoluted and perhaps intricate.



Figure 22: The aggregate Environmental Score of BMW, composed by well-known environmental analyst ratings, compared to its peers in the Automotive Industry. Source: [www.badbuster.com](http://www.badbuster.com) (BadBuster, 2007).

Comparing the individual scores of BMW and Honda in figure 23 below shows clearly that there is a lack of consistency in how to interpret the environmental aspects of a firm and how to handle them. There is, furthermore, little consensus among the different analyst initiatives in what to assess as we see in the case of 'CDP (Carbon Disclosure Project) – Global FT500' and 'Ceres (network of investors, environmental organizations and other public interest groups working with companies and investors to address sustainability challenges) – Corporate Governance and Climate Change'. These two initiatives and their

different foci are just one example among many others and they focus, of course, on different aspects which results in different ratings.

The ratings of Carbon Disclosure Project (CDP) are often referred to as a score of carbon emissions. It is, however, actually not focusing on carbon emissions *per se*, but on how well the firm manages to report on its carbon emission work. Consequently, the CDP initiative is rather a measurement of the management systems for environmental aspects (in this case emissions) and the reporting thereof, but not a very good indicator of environmental performance of the firms and especially not covering the products' performances. BMW, which is a company recognised for having its environmental management in place (see the high total environmental scores in SAM's DJSI) and emissions from its judicial entities (see Hahn *et al.*, 2009) naturally receives a high score in the CDP rating. Honda, on the contrary, receives a considerably lower rating. The CDP scores for BMW and Honda are 70 and 40 respectively (see figure 23).

The ratings of Ceres, however, focus on the performances of the offerings of the firms analysed to retrieve a picture of the carbon emission improvements of Honda's products by in-depth analysing the development of different technologies to reduce product emissions and the market introduction of thereof. Honda is, furthermore, recognised for its policy and long term product emission targets. The focus in the WRI and WBCSD study '*Changing Drivers*' described above is also on product performances, technology developments, as a mean to estimate the risks but also opportunities of the auto manufacturers in the eyes of future legislation in regional markets of imperative importance. There too, Honda receives a top position for its carbon emissions efficient product portfolio. BMW, on the other hand, in the '*Changing Drivers*' report receives a bottom placement for its product portfolio's high carbon emissions that are deemed to retrieve the highest increased cost for estimated future legislation expected to be introduced in the most important world markets if the company does not manage to improve its product portfolio carbon emission performance considerably.

From the discussions in the paragraphs above we see that both BMW and Honda by different ratings are put in the top position in their industry concerning their environmental aspects and sometimes in the bottom and usually BMW and Honda are put in the opposite ends of the scales applied as dichotomies. As we also saw these initiatives' focus when providing scores for auto firms' environmental aspects tend to differ significantly, some focus on reporting transparency while others on performance of firms or their products. A major obstacle, however, for the value of such information is that the intended users of this information do not often know the difference of these scopes and there is a tendency to regard the different scoring alternatives as a rating of performance, either of the firm or on its product portfolio.

Other areas that are dealing with environmental and social characteristics of offerings such as labelling of food and funds are struggling with multiple initiatives that are diverting in nature which makes it very difficult for the intended consumer to use the information about them. Labels of food for concerned consumers may deal with ethical aspects of animal treatment, but not with environmental efficiency while others may focus on the wealth of farmers. Funds for concerned consumers may be labelled as environmental fund, but are increasingly containing considerations for social aspects, which may be contradictory to the intentions of the environmentally concerned investor (Sveriges Natur, 2004; cf. Hamilton, 2007; cf. Cerin and Dobers, 2008). The former CEO of Robur, which is the largest retail fund manager in Sweden, has explained that it is very difficult for the individual investor to understand exactly what he or she has invested in.



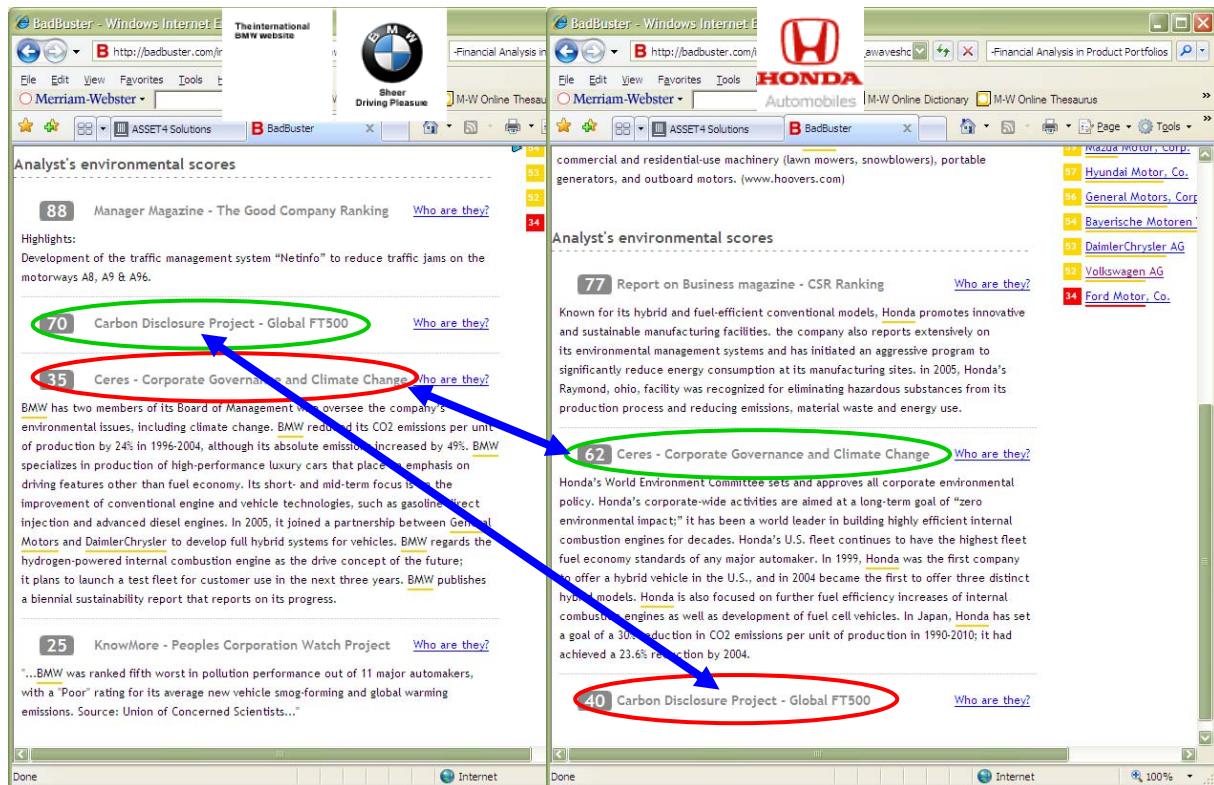


Figure 23: The aggregate Environmental Score of BMW, composed by well-known environmental analyst ratings, compared to its peers in the Automotive Industry. Source: [www.badbuster.com](http://www.badbuster.com) (BadBuster, 2007).

So, various rating initiatives of firms may be interoperated as providing a scoring of similar corporate handling of environmental aspects at a first glance. But, when looking into the different initiatives it becomes clear that the purposes of them is quite diverse and not necessarily focusing on the environmental performances of emissions or an attempt to assess how the firms' financial outcomes are affected in the future – like 'Changing Drivers', Ceres or Innovest Strategic Value Advisors – but focusing on managerial matters such as SAM in their Dow Jones Sustainability Index (DJSI) or transparency of reporting carbon emission related aspects like Carbon Disclosure Project (CDP). Cerin and Dobers (2001a) on the DJSI and Cerin (2002) on the OMX Stockholm Exchange detected that the inclusion of firms to DJSI is very much dependent on firm market capitalisation size since the ability to report on corporate management is linked to corporate size.

An important question is if the receivers of this information realises what the senders of the information actually are displaying, e.g. that CDP is not dedicated to emission performances? If there is a mismatch in the believes among the receivers and users of the ratings and what the ratings actually are including in their scores then there is a problem for the assessed firms since the actions of e.g. environmentally or socially concerned investors may be based on misguided information. The general believes, furthermore, since the beginning of DJSI has been that the index is reflecting the sustainability of firms compared to their sectors. Cerin and Dobers (2001a; 2001b) have, hence, argued for a more focus on real environmental performance of firms and their products.

## 9.2 Comparing the environmental information in ESG ratings and financial analyst reports

When analysing the perception of ABB's handling of environmental and social aspects Swanström and Cerin (2006) found out that all respondent groups state that the two most important sources for companies' sustainability information are based on voluntary reports and personal contacts. One stakeholder group, the Finance SRI Adv stakeholder group, sees, however, external third party publications as equally important as the other two sources, but according to the respondents of this finance group it is a real struggle to find such data. One respondent from academia, Academia Environmental Management, sees the future trend as there *"will be more focus on performance and less on certificates and self-reporting."* A comment from Academia performing Accounting and Investment research explains that *"What is voluntary today will become mandatory tomorrow. Today's frontrunners will thus shape tomorrow's rules, laws and regulations."* These responses are confirmed by the findings in a recent report from Swedish EPA (Flening, 2005) where it is stated that environmental reports focus too heavily on the existence of management systems but lacks performance information on how the company affects the environment and, importantly, lacks information on how the environment may affect company growth.

As seen in table 5 below there exist considerable differences in **A)** what environmental aspects the analyst agencies for the socially responsible investment segment of the financial community and related initiatives focus on and **B)** what environmental aspects that the financial analysts focus on in their sell-side analyst reports. The columns representing ESG Analyst A through G are retrieved from a study carried out by Hedesström and Biel (2008) and these columns compare the evaluations of companies' environmental and social performances that is carried out by different SRI analyst agencies. Their SRI analyst agencies are foremost represented by analyst organisations like; GES Investment Services, Innovest Strategic Value Advisors, Ethibel, FTSE4Good, SAM, EIRIS, but incorporates also the global reporting initiative (GRI) protocol for how organizations can report on environmental and social aspects linked to the organisation's activities. The column to the right in table 5 below is retrieved from the vast study made in this research project on the environmental content in financial analysts' reports from three industry sector; Chemicals, Electrical Equipment and Paper & Forest Products.

In the table, an X mark indicates that the analyst represented by that column take the environmental aspect of the row in question into account when providing information to the investment and fund firms. The X marks for the financial analyst column is based on figure 25 (further down in the report), displaying the environmental aspects presented in financial analyst reports.

It is clearly shown in the table below that the ESG analyst and the financial analyst focus on very different environmental aspects in their work to inform the investors and fund managers about companies' environmental aspects. Moreover, the table illustrates convincingly that the group of ESG analysts – despite existence of some differences – show a rather coherent overall picture on what environmental aspects they focus on. This is significantly different from the financial analysts' reported environmental information in their reports.

So, let us now summarise the information focus of the ESG analyst and the financial analysts by dividing them into two separate groups:

- **ESG Analysts' use of Environmental Information**

The seven actors - GES, Innovest, Ethibel, FTSE4Good, SAM, EIRIS and GRI – constituting the ESG analyst group from A to G all have a strong focus on the *Internal*



*Environmental Policy Criteria* where almost all aspects are covered by all actors. This focus is similar to what is reported by firms in their voluntary reports on corporate responsibilities on environmental and social aspects (cf. Ljundahl, 1999; cf. Massarsch and Enell, 2008) and also heavily criticised by the Swedish EPA (Flening, 2005) as well as sell-side analysts, fund managers and academia researching accounting and finance (Swanström and Cerin, 2006). Concerning *Background (Conventions Referred to etc)* 4 out of 3 ESG analysts have all aspects (or except one aspect) covered. Here, again it is showed in the Swanström and Cerin (2006) study that, a few number well informed ESG analysts tend to disregard these background aspects since they are not considered to provide any information for estimating the company's environmental performance and how it affects future revenues (which is similar to the financial analysts' use of environmental information). The general ESG analysts pay, however, a much lesser interest to *Environmental Performance Criteria* and aspects concerning water, biodiversity, products, services, transports, demand suppliers, regulation facing the firm, regulation facing the customers and customer demands.

- **Financial Analysts' use of Environmental Information**

Most of these *Environmental Performance Criteria* that are almost neglected by the ESG analysts constitute the foundation for the environmental information that the financial analysts write about in their financial reports, except for water, biodiversity, services, transports and demand suppliers. The other performance criterions have a closer link to company financial outcomes. Those criteria, being to a larger extent associated with the risk side are materials, energy, emissions, regulation facing the firm and toxicity have been addressed foremost by the financial analyst, but this goes also for the criteria that considered to be linked to business opportunities i.e. products, regulation facing the customers and customer demands. In fact the business opportunity focused aspects of *environmental Performance Criteria* are especially thoroughly dealt with by the analysts compared to (the other aspects and to) the ESG analysts.

This foci, by the financial analysts that use environmental information, on environmental performances is supported by the most advanced and acknowledged ESG raters in Swanström and Cerin's (2006) claiming that the assessments most focus on how performances may affect the financial outcomes of firms. The ESG analysts on the knowledge frontier continue: Signing up to general and standardised, international commitments does not help us in our assessment of the firms. The portfolio managers in the study were even more reluctant to the current available environmental information and lacked the same environmental linkage to company profits.

These negative views on signed global conventions on good conduct and environmental policy criteria are, hence, provided by the mainstream of analysts, but also by well acknowledged ESG analysts (for looking for enhanced alpha) as well as by portfolio managers (even portfolio managers of global ethical funds). Now, let us turn to the table below, which is based on the Hedesström and Biel (2008) study on ESG analyst information and this study on environmental information in financial analyst reports:

Table 5: Comparing the corporate information ESG and Mainstream Financial Analysts include in company assessments. The table is based on the ESG analyst table in Hedesström and Biel (2008) and the Financial Analyst Reports assessed in this study.

Comparing ESG Analyses to Mainstream Financial Analyses								Financial Analyst
ESG Analyst A through G:								
	A	B	C	D	E	F	G	
<b>BACKGROUND (CONVENTIONS REFERED TO ETC)</b>								
UN conventions (human, child, ..)	X			X	X	X		
UN Global Compact	X				X	X		
ILO	X			X	X	X		
OECD	X			X		X		
<b>INTERNAL ENVIRONMENTAL POLICY CRITERIA</b>								
<b>Formalised policy</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	
Management engagement	X	X	X	X		X		
Environmental management system	X	X			X	X	X	
<b>Public reporting</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>		
Dialogue		X		X		X	X	
Staff education								X
<b>ENVIRONMENTAL PERFORMANCE CRITERIA</b>								
Material (weight; % recycled)	X	X		X			X	X
Energy	X	X	X	X			X	X
Water			X	X	X			
Bio-diversity	X			X	X			
Emissions	X	X	X	X	X		X	X
Waste		X	X	X	X		X	
<b>Products</b>				<b>X</b>			<b>X</b>	<b>X</b>
Services	X			X				
Transport				X				
Demand suppliers								
Compliance with regulations		X		X				X
<b>Hazardous substances</b>	<b>X</b>							<b>X</b>
<b>Legislation facing customers</b>								<b>X</b>

Table 5 shows that the aspects disclosed in the financial reports, containing environmental information, are more focused on products sold and the customer and market perspective. These issues linked to the cash flows of the analysed firms. While the ESG analysts in their ratings and scoring of analysed firms are more focused towards environmental preparedness and signed international ethical initiatives and conventions. When the ESG analysts were interviewed in the Swanström and Cerin (2006) study, the ESG analysts employed by the analyst firms having received the highest marks for the quality in their research provided a picture that was somewhat different from their own companies' systems of rating and showed signs of even greater insights about desired products and services to their financial customers than the most prominent analyst firms had managed to implement into real products. These analysts' answers were quite similar to the types of environmental issues focused on in financial analyst reports (that contained environmental information – circus one third did), but to a much more rigorous depth and more systematic than the financial analyst reports touch upon these matters.

It is, moreover, important to acknowledge that there are different segments of financial analysts and to increase the understanding of what information the financial analyst regard important or use for investment recommendation a segmentation of the financial analysts is vital. An assessment on the aggregate analyst community is, hence, not providing the full understanding and tables comparing ESG analyst preferences to financial analyst, as in table 5 above, is one way to increase the possibilities for how to successfully address the analyst and the investment community on environmental aspects.

Already in 1998 Pettersson and Earl, (1998) investigated the views of various analyst groups in London on environmental aspects. The results from their assessment can be clustered into three distinctive analyst clusters and the environmental areas of interest grouped into five as done by Cerin (2000). The **General Fund Analysts** expressed a preference towards financially linked data, *finance data*, while **Ethical Fund Analysts** prefer information regarding *environmental performance* and *risk & compliance data*. No clear results could be drawn from the cluster of **Credit and Insurance Risk Analysts**, but they appear to fancy *finance data* as well as *risk & compliance data* (Pettersson and Earl, 1998). **No analyst cluster** paid much attention to *stakeholder involvement* and *environmental opportunities*.

Some ways to divide the financial analysts and their reports in order to increase the understanding in how they use and need ESG information in their financial analyst research reports is e.g. to divide them into:

- A) industry groups, depending on which industry the reports of the analyst cover,
- B) alert reports, ordinary (more thorough) reports or industry outlook reports,
- C) two groups depending on the length of the report and
- D) the financial industry segment the report or analyst is trying to target

Usually, alert reports that come out after an occasion of company reporting, aside from the annual reports, on a specific issue and these alert reports are usually confined to some 3 to 5 pages. In this study financial analyst reports 15 pages or longer has been included. Then there is important to specifically look at the industry outlook report since they contain a longer time horizon than ordinary analyst reports on firms, and do often contain information on expanding economies, resource as well as regulatory constraints on aspects affecting the development of the industry and its components.

## **10 Developing an ESG Framework for Analysing the Extra-Financial aspects in Financial Analysts' Reports**

In this part of the research project, the aim is to explore what environmental information is included in financial analyst reports by the analysts in the financial industry to retrieve an understanding of what information these analysts actually use and consider in their valuation reports. The framework for retrieving how analysts in the financial community use and consider environmental, in particular, and corporate responsibility information, in general, this part of the research project is applying the framework for a company's voluntary environmental reporting strategy developed by Cormier and Magnan (1999), and later adjusted as a multi-item instrument for analysis of environmental reports (Cormier and Magnan, 2003). This framework is in this section applied to corporate annual reports, but also extended to structure the content analysis of financial analysts' reports – company, sector and ethical – with respect to environmental information and corporate responsibility issues.

### **10.1 In general**

Since evidence exists that financial analysts buy and sell recommendations these reports ought to influence the actions of the portfolio managers. Research indicates that these recommendations subsequently affect the actions taken by portfolio managers and, thereby, the stock market and then ultimately the cost of capital of firms (cf. Demirakos et al., 2004; von Nandelstadh, 2003). These reports as well as the analysts producing them constitute a linchpin in the investment value chain when mitigating the information asymmetries between the firm managers and those investing in them.

Research looking into socially responsible investments (SRI) has often dealt with, or tried to deal with, the value relevance of environmental, social and corporate governance information, on the one side, and, on the other, the profitability and premium stock market prices of firms (e.g. Cerin and Dobers, 2001a; Halme and Niskanen, 2001; Konar and Cohen, 2001, Derwall *et al.*, 2004; Hassel *et al.*, 2005; Nilsson *et al.*, 2008). Similarly, the Swedish Society for Financial Analysts (SFF) have made recommendations for their members to incorporate environmental aspects into their assessments by pressing the importance of a company's environmental concerns and performance for estimating the financial feat.

The Analyst Society's recommendation, Environmental Information for Financial Analysts, states: "For an increasing number of firms, a positive environmental profile has become an important element in their marketing strategy of the firm, and a lack of such a profile constitutes a risk factor" (SFF, 2000, p. 58). More importantly, the society suggests that "Environmental factors will increasingly influence the future cash flows of firms in both a positive and negative way. Equity valuation, credit analysis, and other economic decisions that involve financial analyses are based on forecasts of future earnings or cash flows. These forecasts are influenced by or complemented with sensitivity analysis and risk estimation. The opinion of the Society is that such estimation will be increasingly determined by environmental factors." (SFF, 2000, p. 58).

Recently, the Swedish Society for Financial Analysts went even further, developing their *Recommendations on Corporate Responsibility* to express the pivotal role environmental issues may have

in developing products that meet the demands of concerned and environmentally regulated customers, but also as jeopardising the sole existence of the company itself if not having the systems for environmental and social aspects in place within the own organisation or upstream (SFF, 2008).

## 10.2 Interview or content based analysis of financial analysts and environmental aspects

Some studies have been carried out studying actors' perceptions on the importance of environmental and social information – applying a responsibility or a sustainability perspective. Corporate environmental and sustainability managers have been interviewed about the relevance of this information for the company. Too often these studies are satisfied by just obtaining the view of the sustainability manager or the ethical analyst which, of course, is somewhat erroneous if one believes this reflects the true identity and real actions of the company. Similar asymmetries may arise between the picture retrieved by the researcher if the information gathered is solely based on the views of the ethical analyst and not complemented by the views of the so called “mainstream analyst”. For more on this critique on how researchers too often tend to view the organisation assessed as a black box where actors have similar beliefs and act similarly go to Cerin (2005) or Swanström and Cerin (2006).

Orens and Lybaert (2007) have statistically analysed the financial analysts' use of non-financial information compared to the information in corporate annual reports by utilising two different models: *One*, to examine the content of financial analyst reports, *two*, to survey the analysts with a questionnaire. The non-financial issues dealt with in the study were not predominantly environmental or of a social responsibility character, but *forward-looking information, information about management and shareholders, background information about the company* as well as *intellectual capital information*. In general their assessment established that the content analysis method and the survey method did not differ significantly except for forward-looking information and internal-structure information. Here, the survey results showed a positive relationship between these information aspects to the analysts' forecast accuracy. The content analysis of the financial analysts' reports shows, however, no significant relationships between the use of forward-looking information and internal-structure information, to the analysts' forecast accuracy.

Obtaining the views of the mainstream actor may, furthermore, reflect the perceived political correct answer and not the answer that reflects the actions of the organisation as an attempt to protect the ongoing procedures, e.g. business as usual, by putting up a facade copying the image wanted or expected by society. There exists a whole field of theory on these adversaries that exists within organisations and that may face the actor wanting to retrieve an accurate picture from the outside and in, which is problematic not only for researcher but indeed for the principals trying to steer their companies towards their own aims. Actors in an organisation may decouple the information to the outside from their actions as means to avoid outside pressure (Meyer and Rowan, 1977) and managers that also adjust their reporting to their different superiors – i.e. decouple the information to the different superiors even to the degree that the reports may become conflicting – are the managers that succeed better within the studied organisation, according to Brignall and Modell (2000).

Furthermore, there exists an inherent risk that an organisation may adopt an *isomorphic* copying of other firms' environmental and sustainability reports, that is copying other firms' communication to stakeholders. This may enable the firm to conduct its business as usual which is in line with the

critique from Rikhardsson and Welford's (1997) on the business community, for hijacking the environmentalism. Carrying out business as usual is to copy its own past behaviour in its present real actions and performance – *automorphism* (Schwartz, 1997; Czarniawska, 2002). In the case of discrepancy in reporting (image – cf. Brytting, 2002) and actions (identity – cf. Brytting, 2002) we see how an isomorphic de-coupling of image creation to stakeholders defends and encompasses an automorphic business as usual behaviour.

These detected gaps between image and identity (e.g. the actions of an organisations) do not have to results from a well-structured process, since environmental and sustainability information supplied by some companies in their reports is not always well thought through according to a study on the environmental reporting by Swedish banks and insurance companies where a large portion of the environmental managers did not know to whom they were reporting and sometimes not really why. This resulted in reports that were copying reports from companies that had by others been identified as forerunners and as a result the own report may get decoupled from real identity the financial actor (Björklund, 2006).

Interview and survey based research by Deegan and Rankin (1997), Mills et al. (2001) and Hunt and Grinnell (2004) indicate that the information in the financial statements is to some extent considered by financial analysts. A survey on financial analysts in the U.S. by Hunt and Grinnell (2004), however, shows a lack of knowledge about environmental reporting initiatives, and low perceived interest in environmental issues in the investment industry. Similarly, the holistic interview study by Swanström and Cerin (2006) illuminates the indeed low interest in environmental aspects among financial analysts and portfolio managers in the Nordic Countries, which in fact was the only stakeholder group of ABB that had so deficient knowledge of environmental aspects in industry that made it impossible for them to answer the questions put to them. All other stakeholder groups – encompassing a good 100 interviewees from suppliers, customers within ABB and academia – were well or rather well acquainted with industry environmental aspects and often very eager to discuss the topic. The mainstream analysts and portfolio approached, in general, showed a low interest of the topic to express it benevolently.

The lack of knowledge along with deficient interest among the analysts may, moreover, explain the Hunt and Grinnell (2004) survey's low response rate on 7.9 percent. A study by Fayers et al. (2000) in Australia identified only a small shift towards including environmental performance in investments and the results from Mills et al. (2001) interviews with investment professionals in Australia illuminates that they do not place the same emphasis on environmental concerns as other valuation factors.

These results illustrating the deficient knowledge on environmental aspects and the lack of interest in environmental issues among analysts contradicts some previous quantitative research that demonstrates the important link between the environment and equity. The society for analysts in Sweden (SFF) also seems to believe that members should be conscious of environmental issues in valuing companies. Little, if anything, is, however, known about the actual amount of environmental information dealt with in the financial analysis as well as in investment decision making.

Then, it is also important to acknowledge that there are different segments of financial analysts and to increase the understanding of what information the financial analysts regard important or what information they actually use for investment recommendations. A segmentation of the answers is, thus, vital. An assessment on the aggregate analyst community is, hence, not providing the full understanding and tables comparing ESG analyst preferences to financial analyst, as in table 5 above, increases the possibilities for how to successfully address the analyst and the investment

community on environmental aspects. Already in 1998 Pettersson and Earl, (1998) investigated the views of various analyst groups in London on environmental aspects. The results from their assessment can be clustered into three distinctive analyst clusters and the environmental areas of interest grouped into five as done by Cerin (2000). The General Fund Analysts expressed a preference towards financially linked data, finance data, while Ethical Fund Analysts prefer information regarding environmental performance and risk & compliance data. However, no clear results could be drawn from the cluster of Credit and Insurance Risk Analysts, but they appear to fancy finance data as well as risk & compliance data (Pettersson and Earl, 1998). No analyst cluster paid much attention to stakeholder involvement and environmental opportunities.

The purpose of this financial analyst report section, section 10, of this report, is to analyze what environmental aspects the financial analysts actually take into account in their equity valuation reports. In contrast to the earlier interview and survey-based research – where analyst perception of the importance of environmental valuation process is analysed – a content analysis method is applied in this investigation on the actual use of environmental aspects in financial analyst reports. The framework for this study is the method applied by Cormier and Magnan (1999), on corporate voluntary environmental reporting, later on presented as a multi-item instrument for analysis of environmental reports (Cormier and Magnan, 2003). The framework has, thereafter, been applied to two financial analyst pre-studies looking into how North American and European analysts, when analysing the Oil and Chemical industries of North America and Europe, incorporate environmental aspects into their reports to the investors (cf. Nilsson et al., 2008; cf. Nilsson, 2008).

### **10.3 Enhancing the importance of corporate reporting by illuminating financial analyst report content**

Both Previts et al. (1994) and Roger and Grant (1997) maintain that content analysis of sell-side analyst reports reveals vital insights about the needs of the users of environmental reports which may, in turn, enhance the reporting practices of firms. This is truly vital information for the reporters of corporate non-financial information from inside-and-out, since several studies – on non-financial information in corporate voluntary stand alone reports (i.e. not included in the annual report), – have shown that there is a lack in understanding who the retrievers of such information are and a discrepancy between the intended receivers and the actual readers of such reports (cf. Cerin, 2000; 2005; cf. Ljungdahl, 2000; cf. Massarsch and Enell, 2008). As summarised by Cerin (2006a) the intended audience is often staff, customers, investors and authorities while the actual readers are usually restricted to competitors' environmental staff, consultants (wanting to sell reporting aid, e.g. to competitors) and to student (of which a small portion may become future employees). Even more astonishing is the discoveries by Ljungdahl (1999) and Björklund (2006) that the corporate agents performing the communication of company environmental responsibilities – often the environmental, sustainability or CSR manager – do not always know why and to whom they are communicating to. This perceived total lack of understanding whom they are communicating to (and why) – which in Björklund's study also was a sign of giving up due to a lack of feed back from stakeholders – is fortunately not widespread, but is a vital sign of the need for feedback to the corporate staff reporting from the inside to the outside world to adjust the message and information to the needs for the company important external stakeholders.

These obstacles in voluntary communicating non-financial or rather non-easily tangible aspects from the company to its external stakeholders were in the budding phase of environmental reports in the late 1990's an effect of isomorphism where firms tended to copy the communication of other firms that had been seen as superior by the community i.e. various environmental reporting awards. Many firms felt it was a necessity to create these reports on environmental aspects and commonly copies the success stories and, hence, endangering the linkage to the company's own activities in the own environmental reports. This phenomenon when the reports are copying the structure and content of other firms' and at times leaving out the own firm's specific conditions is labelled decoupling which could be done on purpose or not. In fact, even though environmental reporting in Ljungdahl's (1999) study was considered necessary among many agents few could explain why, and rather refer to that "Everybody else does it". The decoupling activities may also be a way for the firm to carry out business as usual and, thus, hijack the environmental agenda (cf. Rikhardsson and Welford, 1997).

Now, the development of voluntary reporting on corporate responsibility aspects, exceeding the legal requirements, have undergone some radical changes since the late 1990's into a more standardised form. One major player in this standardisation process is the Global Reporting Initiative (GRI) which has also developed supplements for many industries now in GRI's 3rd version of the Sustainability Reporting Guidelines. The international developments and spread of companies' corporate responsibility reporting globally from the mid-1990's up till now can be tracked and analysed in the KPMG international surveys presented every third year (KPMG, 1993; 1996; 1999; 2002; 2005; 2008).

Since KPMG started their international surveys on the reporting on environmental and social aspects, this voluntary corporate reporting trend in industry has steadily increased (KPMG, 2008) except for some countries that were on the responsibility reporting forefront in the mid 1990's like Norway and Sweden (cf. KPMG 2005; Cerin, 2006a). Voluntary responsibility reporting has augmented considerably in number of reports from being indeed a rare corporate activity in the early 1990's to become a mainstream activity among the world's largest corporations. For instance, the number of companies in the 250 top companies of the Fortune 500 exceeds today 50% (KPMG, 2008). The environmental reporting is highest in sectors with high environmental impacts, but some remarkable increases in reporting have occurred in finance and IT firms (Cerin, 2002b; 2006a; KPMG, 2008).

Even though initiatives like the protocol by GRI and the corporate commitment to UN Global Compact there is no guarantee that the financial sector will find the reports useful, as detected to be the case with financial professionals in Scandinavia (Swanström and Cerin, 2006). The investment professionals were – detected in that study – awaiting more stringent performance measurements to be provided by those initiatives and, as a consequence, requiring the companies to adopt performance oriented communication in the future. Studies like Cerin and Dobers (2001a) and Sjöström (2009) have detected that it is legitimacy building internally for corporate staff working with corporate responsibility issues when their work receive positive attention from sustainability indexes (by ending up high in the rankings) as well as from financial analysts (predominantly ethical ones) that demand company meetings concerning corporate handling of environmental and social responsibilities.

This research project that illuminates the financial analysts' use of environmental information in their analyst reports may, therefore, serve as an enabler of increased legitimacy for environmental issues within corporations as well as larger adherence to corporate social responsibility units and



their work internally within the firms – if it is found that financial analyst reports contain environmental information that is relevant to future firm values.

## 10.4 Retrieving the use of environmental information in the financial sector

As illuminated in the section above the assessment on the essence of environmental information for financial analysts, a qualitative approach is adopted in this research project, looking at what information that is actually used in the financial analyst research reports on firms that then is studied by investors and portfolio managers. In doing so, the environmental information in analyst reports has to be found – in the reports that are selected for the study – and, thereafter categorised and finally scored in order to get a value on the quality the found environmental data provides. Below is a brief description on the methodology applied in this part of the study:

### A quantitative approach

- How environmental information is used by financial analysts when valuing companies?

#### The method

- Research reports compiled by financial analysts from large investment banks are collected;
- Keywords are used for retrieving environmental information in financial analyst reports;
- A coding instrument, is used to classify the environmental performance information in the analysts' research reports by applying an ESG framework to categorise environmental information into environmental aspects and those into environmental items;
- The rating is done with a score from "zero to three". Three points are given if an item is described in monetary or quantitative terms, two points if an item is described specifically and one point if an item is described in general terms.

Nilsson *et al.* (2008) and Nilsson (2008) have applied the methodology to structure the content analysis of financial analysts' reports with respect to environmental information in his study on "*Exploring environmental information in sell side analysts' research reports*". Cormier and Magnan's (2003) instrument were used to measure the environmental reporting level in annual and environmental reports from European firms. The framework of Cormier and Magnan (2003) has also been used earlier in Cormier and Magnan (2002) and Cormier *et al.* (2002). Furthermore, similar frameworks have e.g. been utilised by Al-Tuwairqi *et al.* (2004) and Barth *et al.* (1997).

The Cormier and Magnan (2003) framework was slightly altered to fit the means of the Nilsson *et al.* (2008) and Nilsson (2008) studies. The original framework for the coding of data within environmental reporting has six categories, with a total of 32 items according to the Nilsson studies. These six categories are: *expenditures and risk, laws and regulations, pollution abatement, land remediation and contamination, sustainable development and environmental management*. When examining the Cormier and Magnan (2003) framework for *Environmental reporting ratings* one can see that the framework consists of six categories that are divided into 32 items which are supplemented by eight sub-items.

So, Nilsson's studies examine these six categories with 32 items plus four of the sub-items of the Cormier and Magnan (2003) study, but now escalated to the item level. The other four sub-items are omitted in the Nilsson studies. One extra item, Environmental taxes, which did not exist in the Cormier and Magnan study is added under the category *Laws and regulations*. The Nilsson studies (Nilsson *et al.* 2008; Nilsson, 2008), hence, contain 27 items divided into six categories. When comparing the Nilsson studies to the original it is important to note that some items'

denominations have been altered compared to the Cormier and Magnan (2003) study. For more information on the Cormier and Magnan (2003) framework consult the article in Journal of Accounting and Public Policy or turn to Appendix II in this report for a brief overview.

Since Nilsson's studies examine the level of environmental performance information in financial analysts' research reports from different investment banks two additional categories are introduced. It is common that these sell side analysts use value relevant information to motivate relative valuations. The two additional categories that have been added to the framework to better fit the equity valuation perspective are: *Competitive advantage/disadvantage* and *Political risks*. Under these two categories a total of six items has been added by Nilsson. The resulting framework (Nilsson *et al.* (2008); Nilsson, (2008) for content analysis, with 43 environmental items, is depicted in table 6 below:

Table 6: The framework for content analysis used by Nilsson et al. (2008) based on the framework of Cormier and Magnan (2003).

<b>Framework for environmental content analysis in Nilsson et al. (2008) based on Cormier and Magnan (2003)</b>	
<b>Expenditures and risks</b>	<ul style="list-style-type: none"> <li>-Expenditures for pollution control equipment and facilities</li> <li>-Operating costs for pollution control equipment and facilities</li> <li>-Future estimates of expenditures for pollution control equipment and facilities</li> <li>-Financing for pollution control equipment or facilities</li> <li>-Environmental liabilities</li> <li>-Risk provision</li> <li>-Provision for charge</li> </ul>
<b>Laws and regulations</b>	<ul style="list-style-type: none"> <li>-Litigation</li> <li>-Fines</li> <li>-Orders to conform</li> <li>-Corrective actions</li> <li>-Incidents</li> <li>-Future legislation or regulation requirements</li> <li>-Environmental taxes</li> </ul>
<b>Pollution abatement</b>	<ul style="list-style-type: none"> <li>-Emission information</li> <li>-Water discharge information</li> <li>-Solid waste disposal information</li> <li>-Control, installations, facilities or processes described</li> <li>-Compliance status of facilities</li> <li>-Noise and odours</li> </ul>
<b>Sustainable development information</b>	<ul style="list-style-type: none"> <li>-Conservation of natural resources</li> <li>-Recycling</li> <li>-Life cycle information</li> </ul>
<b>Land remediation and contamination</b>	<ul style="list-style-type: none"> <li>-Sites</li> <li>-Efforts of remediation</li> <li>-Cost/potential liability</li> <li>-Spills</li> <li>-Liabilities</li> </ul>
<b>Environmental management</b>	<ul style="list-style-type: none"> <li>-Environmental policies</li> <li>-Environmental management system</li> <li>-Environmental auditing</li> <li>-Goals and targets</li> <li>-Awards</li> <li>-Department or office for pollution control</li> <li>-ISO 14001/EMAS</li> <li>-Participation in elaboration of environmental standards</li> <li>-Joint projects with other firms on environmental management</li> </ul>
<b>Competitive advantage/disadvantage</b>	<ul style="list-style-type: none"> <li>-Products</li> <li>-General</li> <li>-Market development</li> <li>-Relative valuation/Motivation of investment case</li> </ul>
<b>Political</b>	<ul style="list-style-type: none"> <li>-Risks/environmental opposition</li> <li>-Ecologically sensitive areas</li> </ul>

## 10.5 Developing an ESG Framework for content analysis of Environmental, Social and Governance aspects

The framework applied in this research project to detect the use of environmental information in analyst reports is considerably further developed and refined compared to the ones utilized in Cormier and Magman (2003) and Nilsson (2008). The major differences are **threefold**:

- ✓ **Firstly**, the ESG framework encompasses not only environmental aspects but also social and governance issues as well.
- ✓ **Secondly**, the environmental aspects has been divided into environmental preparedness, environmental performance and environmental impact categories, but importantly here is that environmental performance is in its turn separated into environmental performance of the firm as well as into the environmental performance of the company's products linked to the market requirements.
- ✓ **Thirdly**, the aspects of the ESG framework are supplemented with an indicator to detect whether the environmental aspects (found in analyst reports) are dealing with business opportunities or business risks or both.

This research project has, as a consequence, due to the new ESG framework's division into the product and market perspective as well as due to the utilising of an indicator that focus on the business opportunity or risk character of analysed environmental information a large potential to capture related business opportunities linked to aspects outside the judicial borders of the assessed firm.

The environmental risk side information concerning company sites has, however, in previous frameworks and methodologies and also corporate voluntary reportig on ethical matters, almost been universally prevailing (cf.: Ingram and Frazier, 1980; Wiseman, 1982; Freedman and Wasley, 1990; Barth *et al.*, 1997; Bewley and Li, 2000; Cerin, 2002a; 2006a; Cormier and Magnan, 2002; 2003; Cormier *et al.*, 2002; Patten, 2002; Al-Tuwairqi *et al.*, 2004; Clarkson *et al.*, 2008; Nilsson *et al.*, 2008; Nilsson, 2008). Previously, there has also been deficient use of environmental performance that illuminates factual environmental resource use, toxicity, emissions, judicial, regulatory or financial aspect and not claiming environmental policies, management systems or disclosures to be environmental performance aspects. Environmental aspects related to the company itself and its sites within its judicial borders largely concerns various emissions, litigation and fines as well as legislation facing the judicial company, but this is far away from those environmental aspects that are associated with the products of the firm, its customers and associated cash flows that is so vital for estimating the future value for the firm as illustrated both theoretically and empirically by (Cerin and Dobers, 2001b; Cerin, 2002b; Cerin and Karlson, 2002; Cerin, 2006c; 2006d).

Instead, a focus concerning environmental aspects is introduced in the new ESG framework developed in this report that has moved towards performance related measurements on products and offerings affecting the customer as well as linkages to newer type of environmental regulation that extends the producer responsibility over the product life-cycle, i.e. the European Commission's (EC, 2001) more holistic approach, Green Paper on Integrated Product Policy (IPP), end of life treatment regulations like ALV, RoHS and the in the European Parliament newly passed regulation proposal by the commission to put CO<sub>2</sub> emission demands on each auto manufacturer that their newly registered cars must comply on average in order to avoid penalty payments, which becomes increasingly stringent over the next decades (cf. EC, 2001).

Again, an extensively extended version of the Cormier and Magnan (2003) framework is here, in this section of the research report, developed and used to structure the content analysis of financial analyst reports' information on environmental aspects, but now also incorporating the value chains in which the analysed firms operate within and are dependent on. A firm may have its environmental preparedness (i.e. environmental policy and management systems) in place as well as superior environmental performance (i.e. emissions from plants), but the very crucial environmental aspects that influence the financial stand of the firm may herein from the sensitivity of its products and services in use or from production processes upstream as discussed by Cerin (2006c) when denominating Value Chain Stewardship. The efficiency and attractiveness of the products and services are likely to drive the cash flows of the firm – more so than the risks associated with waste on industry sites – as shown in the Ecological Economics business incentives and property rights analyses by Cerin and Karlson (2002) and the lion-part of financial analysts tend to utilise the discounted cash flow when valuing firms and their stocks by forecasting future cash flows and discounting them by the required rate of return (Demirakos et al., 2004).

The ESG – environmental, social and governance – framework is developed by utilising information categories in global initiatives and one ESG information provider on corporate issues linked to environmental, social and governance aspects. The foundation for the information categories is retrieved from GRI (Global Reporting Initiative), ECCE (the use of EFI - Extra Financial Information, ECCE, 2007), SA8000 (Social Accountability standard), OECD Principles of Corporate Governance, OHSAS 18001 (Occupational Health and Safety Assessment Series), UN Global Compact and GES Investment Services.

Since the authors have been closely involved in the development processes of several initiatives, serving as a foundation for developing this framework, and similar initiatives on environmental reporting there is a strong experience<sup>16</sup> on what aspects that are relevant for estimating the relevance and materiality of environmental, social and governance information. A profound long experiences is attained by working with environmental aspects within industry, oftentimes blue-chip and large corporations, for well more than a decade as well as concurrently within the industry-research collaboration at Chalmers University of Technology – CPM. CPM is the Competence Centre for Environmental Assessment of Product and Material Systems. This product perspective has been introduced into the ESG Framework for estimating the sensitivity of firm due to future legislation as well as approaching resource scarcities. This introduced perspective is in the Framework grouped and labeled as Product/Market Specific Environmental Performance.

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<sup>16</sup> The authors have been a part of several international initiatives that focus on reporting of corporate/organizational responsibility aspects: GRI Economic Indicators Measurement Working Group in London (2001), Green House Gas Protocol Initiative, the GHG accounting along the value chain module (2001-2002), ISO 14063 Environmental Communication secretariat in Stockholm (2001-2005), ISO 14064 Climate Change Working Group and member of the group that translated GRI G3 into Swedish (2008), among others.

Table 7: The framework for content analysis of this study based on the frameworks of Cromier and Magnan (2003), Nilsson (2008), Nilsson et al. (2008) GRI G3 (2007), ECCE (2007), SA 8000 ([www.sa-intl.org](http://www.sa-intl.org)), OECD Principles of Corporate Governance ([www.oecd.org](http://www.oecd.org), 2004), OHSAS 18001 Occupational Health and Safety ([www.bsigroup.co.uk/OHS](http://www.bsigroup.co.uk/OHS)).

ESG Framework		
Environmental		
<i>Environmental Preparedness</i>	Environmental policies Environmental management system/organisation Environmental auditing Reporting environmental aspects Strategy Extent of the company certified to ISO 14001 series/EMAS Extent of employee environmental training Implementing environmental management along the value chain Managing environmental risks	Environmental Preparedness
<i>Pollution abatement and energy saving</i>	Air Emission Water discharge Solid waste disposal Control, installations, facilities or processes described Compliance status of facilities Noise and odours Site restoration Energy saving Greening of transports	Company Specific Environmental Performance
<i>Laws and regulations, site specific</i>	Litigation Fines Incidents Fulfilling Environmental laws and regulations Future legislation or regulation requirements Environmental taxes	
<i>Laws and regulations, product /market specific</i>	End of life treatment Producers Responsibility (ERP) Integrated Product Policy Environmental regulations facing customers/markets	Product/Market Spec. Env. Performance
<i>Product performance</i>	Customer demands Life Cycle Assessments (LCA) Design for the Environment (DfE) Eco-efficiency Recycling	
<i>Environmental impact categories and targets</i>	Conservation of natural resources Deforestation Biodiversity Climate change	Env. Impact Categ.
Social		
<i>Employment practices</i>	Intergration of HR resources into corporate strategy HR/Occupational health and safety policy Improvements of occupational health and safety conditions Management of working hours Training and development Diversity management and equal opportunity Accidents, incidents and deviation OHSAS 18001	
<i>Human rights</i>	Freedom of association and collective bargaining Child labour Forced labour Discrimination Indigenous rights Investment and procurement practices SA8000	
<i>Community involvement</i>	Activities for the community Societal impact of company's products and services Social and economic development Corruption Anti-competitive behaviour Public Policy	
Corporate Governance		
<i>Corporate Governance</i>	Responsibilities of the board Board composition Remuneration of directors and key executives Compliance with local corporate code Investor relations Stakeholder roles in corporate governance Shareholder rights Equitable treatment of Shareholders Audit and internal controls Transparency	

## 11 Selecting the Industries, financial analyst reports and coding of environmental data content analysis

Since the ABB, Akzo Nobel and SCA constitute a part of this research project the natural choice is to select firms that are competing in the same segments. The difficult part, as it showed in the project can be to make a proper selection on which industry peers to choose and apply an industry standard that is well accepted within the financial community.

The Global Industry Classification Standard (GICS) is developed by MSCI – being a major supplier of global indices and benchmark-like products and services – together with Standard & Poor's (S&P) – which is a major financial data and investment services company and provider of global equity indices. GICS is used as a basis for S&P and MSCI financial market indexes. Each company within the indices is assigned to a sub-industry, and to a corresponding industry, industry group and sector, according to the definition of its principal business activity.

The aim of GICS is to enhance investment research and asset management process for financial professionals globally. The structure of the GICS is a result of abundant discussions with asset owners, portfolio managers and investment analysts worldwide to comply with their needs for a trustworthy and transparent standard for industry classification (MSCI Barra, 2009). A similar system like ICB (Industry Classification Benchmark), a classification structure maintained by Dow Jones Indexes and FTSE Group also exists which has well acceptance internationally too, but GICS constitutes the lynchpin in the financial community on industry classification. That is why it is adopted in this research project.

The GICS structure consists of 10 *Sectors*, 24 *Industry Groups*, 68 *Industries* and 154 *Sub-Industries* as of May 2, 2009. When the matching of firms to *Industries* was carried out to enable assessments of financial analyst reports the GICS consisted of the same number of *Sectors* and *Industry Groups* as in May 2009, but the number of *Industries* was 67 and the *Sub-Industries* numbered 147 as of November 5, 2007. The classification of 67 *Industries* has been applied to the research carried out in this report.

In Table 8 below the relation of the *Sectors*, *Industry Groups*, *Industries* and *Sub-Industries* are shown for the three Industries that we assess in this research project. The three *Industries* selected are the three industries to which the three companies participating in this research project belongs to according to the GICS. The three companies are ABB, Akzo Nobel and SCA and their industries within the GICS are Electrical Equipment, Chemicals and Paper & Forest Products, respectively.

Table 8: Relation of the *Sectors*, *Industry Groups*, *Industries* and *Sub-Industries*.

<b>GICS (Global Industry Classification Standard)</b>			
<b>Sector</b>	<b>Industry Group</b>	<b>Industry</b>	<b>Sub-Industry</b>
Materials	Materials	Chemicals	Commodity Chemicals, Diversified Chemicals, Fertilizers & Agricultural Chemicals, Industrial Gases, Speciality Chemicals
Materials	Materials	Paper & Forest Products	Forest Products, Paper Products
Industrials	Capital Goods	Electrical Equipment	Electrical Components & Equipment, Heavy Electrical Equipment

When we started to assess the environmental information content of 4,477 financial analyst research reports for 427 companies in this research project the division of firms into *Industries* was retrieved from one prominent ESG information provider to investment banks and portfolio managers. The financial information provider has a high market penetration in several markets and is a strong player in its geographical region. The data used for placing firms within these industries came from that ESG provider's data, but their groupings did unfortunately not quite follow the GICS for the first years that our study covered. The information provider to the financial community had adopted a mixture of *Industry Groups* and *Industries* where some companies of one *Industry* were placed correctly within its *Industry* while others were placed within its *Industry Group* and sometimes within someone else's *Industry Group*. The newer company GICS data of that information provider was, however, all correct. The only erroneous classification existed for their first year of data, which we unfortunately had used. When this was detected, the assessments that had been carried out so far had to be altered and the companies in the research project had to be assigned to their correct *Industry* belongings. The progress of this research project halted for a while and it had to be sorted out what industry classifications that actually were erroneous and considerably amount of work in the research project had to be redone.

## **11.1 Selecting financial analyst reports and keywords for fetching environmental data**

There is an enormous amount of financial analyst reports that are being assessed in this research project, namely 4,477 reports, all in PDF format. These are retrieved by having access to the database Thomson Financial Investext at Umeå School of Business. Thomson Financial's Investext encompasses a collection of over 6 million investment research reports written by expert analysts at 450 of the top investment banks and consulting firms. Historic coverage, dating back to 1982, is available from more than 900 contributors. Reports are offered on a delayed basis, with an average embargo of 8 days. Investext includes research from 17 of the Wall Street Journal's top 20 investment banks, including several analyst organisations that are exclusively available through Thomson Financial. Top firms include Merrill Lynch, Morgan Stanley, Credit Suisse First Boston, UBS, Deutsche Bank and Bear Stearns.

The reports for this research project were downloaded during late 2007. Short analyst reports contain only rather brief information that are unlikely to contain any lengthy depictions on environmental aspects. Similar to Nilsson *et al.* (2008), only 15 pages long analyst reports, or longer have, therefore, been selected for this research project. A search with a number of keywords for finding the content of environmental data in the selected analyst report has then been carried out. Since these financial analyst reports are in PDF format, the search function of Adobe Acrobat software is utilised making it possible to search in multiple documents simultaneously. The study utilises the same search keywords as Nilsson *et al.* (2008) and Nilsson (2008), except for one additional which is CSR (Corporate Sustainability Management). The Nilsson studies' key words are influenced by the content analysis framework applied in those studies, but also inspired by earlier studies within the field of environmental reporting and environmental performance measurement, like Salomone and Galluccio (2001), Hughes *et al.* (2001) and Ilinitch *et al.* (1998). The search words of this study are displayed in Table 9.

When the Search keywords in the financial analyst reports are identified, then the document are opened and the paragraphs with the words looked for are copied onto a separate word-file where all analyst reports' environmental information is gathered, clustered and displayed per analyst report. These extracts of environmental information in the word-file are then assessed in order to



decide what environmental item it belongs to and what score it should be given. The actual searching through the PDF-files with search keywords was performed by four of the very top student obtaining the Masters degree in Accounting late spring at Umeå School of Business 2007 and constituted their first work assignments after the exam. The actual assessment and valuation of paragraphs that contain the detected search keyword was done by the researchers behind this research project.

Table 9: Search keywords applied to retrieve environmental information included in analyst reports.

Search keywords for retrieving environmental information in analyst reports		
1. Carbon	2. CSR	3. Eco-efficiency
4. Ecology	5. Ecological	6. EMAS
7. Emission	8. Environmental	9. ISO-14000 -14001
10. Natural resource	11. Noise	12. Odour
13. Pollution	14. Recycling	15. Spills
16. Sustainable	17. Toxic	18. Waste

There were 367 sell-side financial analysts research reports on the Chemicals industry, Electrical Equipment industry and the Paper & Forest Products produced by some 82 investment banks. The banks with most analyst reports containing environmental information came from, in descending order, Deutsche Bank, Citigroup, Credit Suisse, ABN AMRO, UBS Warburg, HSBC, UBS, Bear Stearns, Fulcrum Global Partners, ING, Ing Financial Markets, Salomon Smith Barney and Commerzbank Securities. The full list over investment banks producing analyst reports on the Chemicals, Electrical Equipment and Paper & Forest industries can be viewed in Appendix III.

## 11.2 Coding and rating of Environmental Data

In order to deal with the qualitative information on environmental issues in the financial analyst reports, that constitute the lion-part that has to be assessed in this research project, the information fetched needs to be transformed into quantitative data that can e.g. be dealt with for descriptive analyses. Therefore, the environmental content for each environmental item of the ESG-framework developed in this report will be turned into figures. For achieving this, a coding tool needs to be applied.

Following Cormier and Magnan (2003) – which also has been adopted by Nilsson (2008) and Nilsson *et al.* (2008) – the rating is carried out with a score ranging from zero to three for each environmental item, as follows:

- ✓ **three** points is given if an item is described in monetary or quantitative terms,
- ✓ **two** points if an item is described specifically,
- ✓ **one** point if an item is described in general terms and,
- ✓ **zero** points if the environmental item is not mentioned at all.

Since the maximum score on each item in the ESG-framework is three, the maximum score that is possible for the environmental information in one financial analyst report is 111 points which corresponds to score 3 for each item times 37 environmental items. If all items – covering environmental, social and governance aspects – of the ESG framework should be coded then the total possible maximum score would be 3 times 68 ESG items (37 environmental items + 21 social items + 10 governance items) totaling 204 points which is virtually impossible for any financial analyst report to acquire.

So, this environmental content score 111 is not really achievable, especially if considering that on average almost 64 % of the analyst reports in this study do not contain any environmental information at all when searching for environmental search keywords in financial analyst reports – see table 10 below. The score for those analyst reports without any environmental information is 0 out of 111. The reports that lack environmental information are – percentage wise – not at all evenly distributed along the different sectors. The percentage of financial analyst reports that do not contain environmental information range from almost 97% in the Semiconductor Equipment & Products to just more than 21% in the Water Utilities industry. Environmental information is, hence, almost non existent in some sectors while for some other sectors, the majority of the financial analyst reports contain environmental information and constitute there a mainstream phenomenon.

## **12 Results from analysing the environmental content of financial analyst reports**

### **12.1 The amount of environmental information in financial analyst research reports**

Table 10 below depicts the percentages of the browsed through analyst reports that contain environmental data that was detected by the environmental search keywords used. The process is described in section 9.1. When analysing the quality of environmental information and subsequent coding it to numerical values as described in section 9.2 it was detected that in fact some of the environmental search keywords found in the search did in fact not at all have anything to do with environmental aspects as to how firms affect our common milieu. So, when analysing the text paragraphs surrounding the detected search keywords it was found that when the word environment was found it could refer to how the environment is affecting one aspect of business or the product performance instead of the other way around, namely how firms and their offerings affect the environment – which was searched for in this research project.

Table 10 Percentage of Financial Analyst Reports per Industry that Contain Environmental Key Search Words

Percentage of Financial Analyst Reports that Contain Environmental Information per Industry			
Semiconductor Equipment & Products	3,2%	Transportation Infrastructure	35,2%
Telecom	7,7%	<b>Totally for all industries</b>	<b>36,33%</b>
Trading Companies & Distributors	11,1%	<b>Paper &amp; Forest Products</b>	<b>36,5%</b>
Airlines	12,5%	Industrial Conglomerates	38,7%
Pharmaceuticals	13,9%	Marine	40,5%
Air Freight & Logistics	18,8%	Oil & Gas	41,9%
Construction & Engineering	23,9%	Commercial Services & Supplies	46,9%
Aerospace & Defense	24,8%	Utilities	47,2%
Construction Materials	26,3%	<b>Chemicals</b>	<b>50,2%</b>
Industrial*	27,3%	Machinery	51,2%
Road & Rail	31,5%	Metals & Mining	58,6%
Building Products	32,0%	<b>Electrical Equipment</b>	<b>60,0%</b>
Containers & Packaging	34,6%	Water Utilities	78,6%

\* Industrial is not an industry, but sector that in this table is excluding the industries of: Aerospace & Defence; Air Freight & Logistics; Airlines; Building Products; Commercial Services & Supplies; Construction & Engineering; Electrical Equipment; Industrial Conglomerates; Machinery; Marine; Road & Rail; Trading Companies & Distributors; Transportation Infrastructure.

In this research project all research reports exceeding 15 pages were searched for environmental search keywords as described in section 11.1. It is, however, not possible to tell the percentage of the financial research reports found to contain the searched for environmental search keywords that do not at all treat how firms and their offerings affect the environment, since the paragraphs surrounding the identified search keywords have only been analysed for the three sectors selected for this research project. For these three sectors, however, it is found after having analysed the paragraphs linked to the identified search keywords that 82 % of the financial analyst reports that contain environmental search keywords actually deal with environmental aspects dealing with how the firm and its offerings are affecting the common milieu. So, the question now is, what percentage of the financial analyst reports – covering the *Chemicals*, *Electrical Equipment* and *Paper and Forest Products* industries – that really contain environmental search keywords about how firms affect the environment?

Table 11 Percentages of Financial Analyst Reports that contain Environmental Information

Industry	Financial Analyst Reports		
	Percentage of reports that contain environmental search keyword	Percentage of reports with environmental keywords that also contain information related to how firms affect the environment	Percentage of reports that contain environmental information related to how firms affect the environment
<b>Chemicals</b>	50,2%	83,5%	41,9%
<b>Paper &amp; Forest Products</b>	36,5%	69,4%	25,3%
<b>Electrical Equipment</b>	60,0%	88,5%	53,1%

## 12.2 The environmental aspects and items in financial analyst research reports

First the environmental search keywords are retrieved from the financial analyst reports and thereafter they are analysed regarding quality which is graded into numerical numbers ranging from 1 to 3 for each environmental item that exists in the ESG Framework which is developed in this research project. These coding of the quality of environmental information in the analyst reports into numerical values are shown in section 11.2. Below, in figure 24, the average environmental scores per financial analyst report per each of the three industry sectors analysed are displayed.

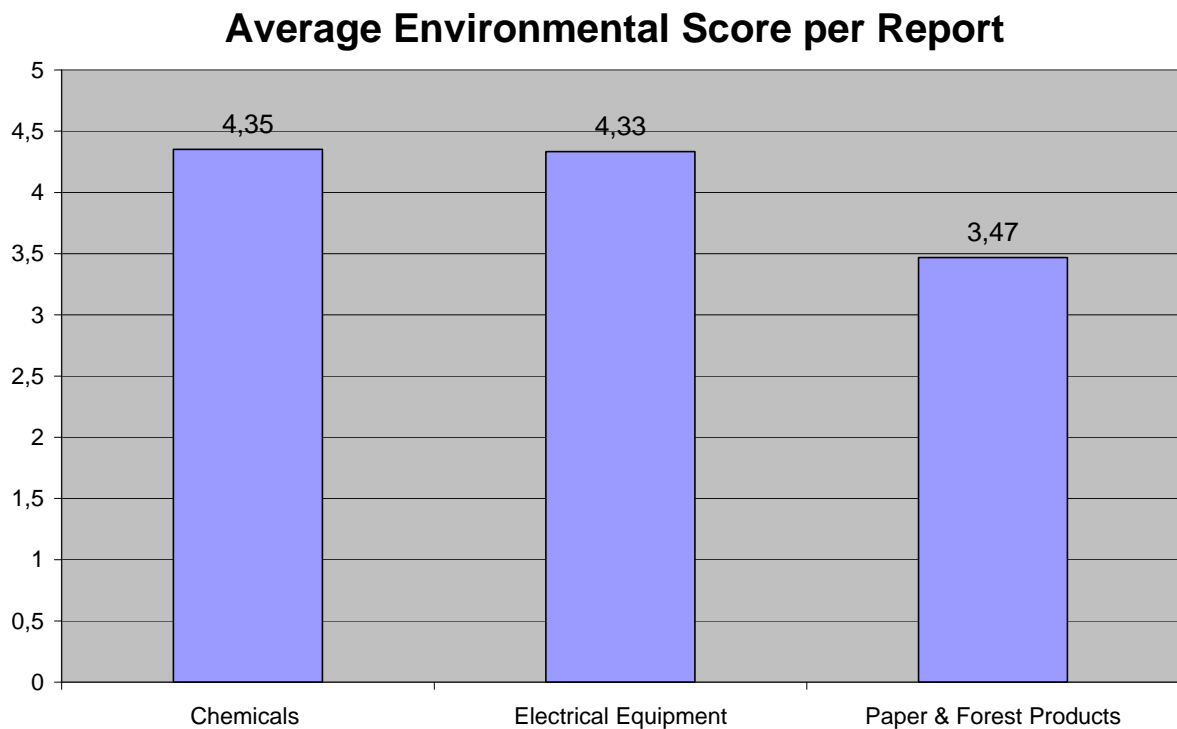


Figure 24: Average company environmental score per industry in financial analyst reports.

The mean environmental scores by industry and financial analyst report is in the Nilsson *et al.* (2008) and Nilsson (2008) articles shown for both A) the case where all financial analyst reports are included into the comparison, i.e. even those 65 % of the reports that do not contain environmental information at all as well as for B) the case where those analytical reports that do not contain any environmental information at all are omitted from the sample. The average score for environmental content in financial analyst reports per industry in the Nilsson studies, consequently, are: 1.40 for the A group and 4.10 for the B group. If looking at the two sectors examined in that study, the Chemical and Oil/Gas industries for the Panel B Group, that only encompasses analyst reports containing environmental information we see that the average environmental content of these sectors' financial analyst reports differ where the Chemical sector reports' have the average score 4.41 and the Oil/Gas 3.51.

As seen in figure 24 above the mean environmental scores by financial analyst reports is broken down into three industries *Chemicals*, *Electrical Equipment* and *Paper & Forest Products*. The figures

displayed concerns the environmental content – the number of environmental items covered and to what degree or quality – merely of those financial analyst reports that do contain environmental information. The reason is due to the fact that the no reporters of environmental information are so plentiful, in average constituting some 64 % of all financial analyst reports for all industries. So, an average score of environmental information in analyst reports per industry would then heavily be reflecting the non-reporters of non-financial information, which is not desired here. The non-reporters of environmental information are, thus omitted from the assessment of environmental items covered and to what depth by financial analyst reports.

So, the average environmental information score for financial analyst reports are in the *Chemicals* sector 4.35, *Electrical Equipment* 4.33 and for *Paper & Forest Products* 3.47. The corresponding numbers for the two sectors of the Nilsson articles are *Chemical* 4.41 and *Oil/Gas* 3.51. The maximum total score that would be achievable for the financial analyst reports if all environmental items were discussed in quantitative terms (that is score 3 on each item) – would be the score 111 (37\*3) for the analysed analyst reports in this study and in the Nilsson (2008) and Nilsson *et al.* (2008) papers 129 (43\*3). The average environmental information per analyst report per industry compared to the total possible environmental score that an analyst report can achieve is, hence higher in this study than in the studies of Nilsson (2008) and Nilsson *et al.* (2008).

Figure 25 below illustrates the focus each environmental item receives in the financial analyst research reports. The environmental items are displayed in the ESG Framework in Table 7 above. The figure consists of 39 environmental items which are clustered into 4 environmental aspects. It is quite clear, when studying Figure 25 that there is a big difference in how much attention each item is given and how well each environmental they are dealt with in the analyst reports. To enhance the understanding of Figure 25 Table 12 illuminates the labels of each environmental item as well as grouping them into environmental aspects.

As seen in Figure 25 below the five environmental items most dealt with in the financial analyst research reports for the three industries – Chemicals, Electrical Equipment and Paper & Forest Products – are numbers 29, 30, 33, 39 and 23. The ones most dealt with 29, 30 and 33 belong to the Product/Market Specific Environmental Performance. Environmental item 39 belongs to the environmental aspect Environmental Impact Categories and finally number 23 belongs to the Company Specific Environmental Performance environmental aspect.

The environmentally related items that the financial analysts have dealt the most with in their analyst reports are items 29 and 30. These two deal with the customer and market perspectives, looking at regulations facing the customers as well as their demands which can be seen in Figure 25 in combination with Table 12. The foci in these items are, thus, on the products and offerings of the firm. To what extent can the product portfolio of the firm fulfil the needs of the customers' wishes or regulatory demands facing them? Items 29 and 30 are the items that the financial analysts in this study focus on the most in their reports are, thus, linked to future cash flow issues and the soundness of firms for issues such as the ability to pay lenders as well as cover payrolls.

Also item 33 is grouped with the Product/Market Specific Environmental Performance and deals with Eco-Efficiency which is also related to environmental performance facing the customers – but also the firm – as well as related costs for environmental issues or resource use and links back to the attractiveness of the products and inflow of cash to the firm.

Among the top five environmental items that the financial analyst reports deals with is the Toxicity and Health item, belonging to the Environmental Impact Category Aspect. The Company Specific Environmental Performance aspect is represented among the top five environmental items by the

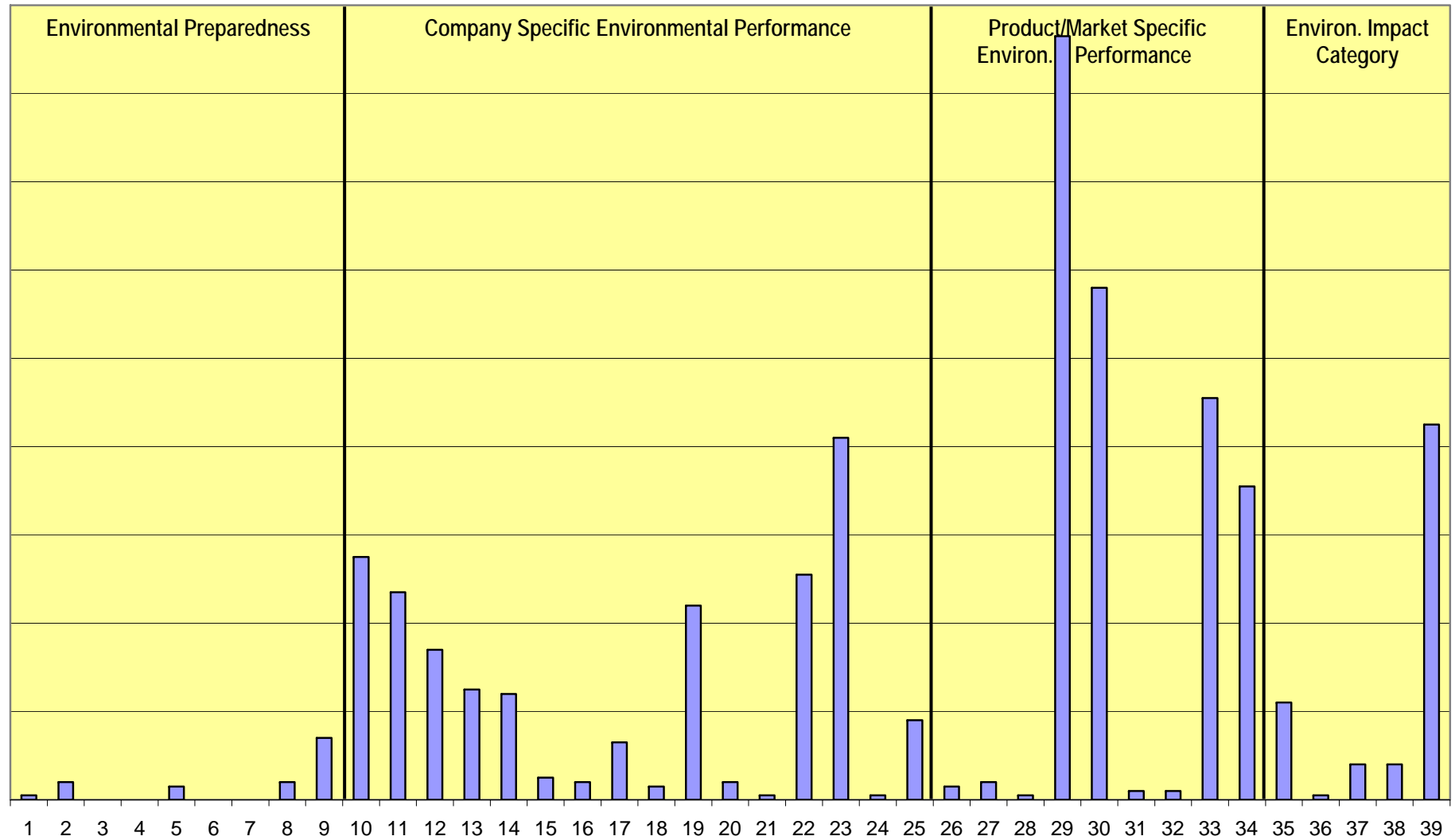
Future Legislation or Regulatory Demands item – number 23. Company related approaching legislation may pose a financial risk for the company that then has to adapt to new roles for its operations.

Perhaps astoundingly, the financial analyst reports do not put any greater attention to the Environmental Preparedness aspect, according to the reports used in this study. This is contrary to the focus of the ethical analysts display in table 5 above. The only environmental item, within the Environmental Preparedness aspect that receives some attention within the financial analyst reports is Managing Environmental Risks. The others – Environmental Preparedness aspects seems to have been regarded as having little influence on future value of the firms and have, hence, been omitted from the lion part of the analyst reports.

Furthermore, there, is a lack of information from those items that deal with policy issues as well as management tools for products environmental issues in the Product/Market Specific Environmental Performance even though that aspect is of great concern in financial analyst reports when dealing with performances and regulation.

Concerning the presence of Environmental Impact Category aspects, see figure 25 and figure 26 below, it is clear that these are in general not much dealt with in the financial analyst reports, except for the environmental item Toxicity and Health which is one of the most well reported environmental items in the analyst reports. Another item that is dealt with in financial analyst reports to some extent is Conservation of natural resources / cost of scarcity, which is of course more important to some industries, e.g. those depending on biological resources as input to their production – than other industries might be.

## Environmental Aspects and Items in Financial Analyst Reports



Figur 25: Distribution of company environmental items scores in financial analyst reports.

Table 12 Company environmental items scores of the ESG Framework used to categorise environmental information in financial analyst reports

ENVIRONMENTAL ITEM	ENVIRONMENTAL ASPECT
1 Environmental policies 2 Environmental management system/organisation 3 Environmental auditing 4 Reporting environmental aspects 5 Strategy 6 Extent of the company certified to ISO 14001 series/EMAS 7 Extent of employee environmental training 8 Implementing environmental management along the value chain 9 Managing environmental risks	<b>Environmental Preparedness</b>
10 Air Emission 11 Water discharge 12 Solid waste disposal 13 Control, installations, facilities or processes described 14 Compliance status of facilities 15 Noise and odours 16 Site restoration 17 Energy saving 18 Greening of transports 19 Litigation 20 Fines 21 Incidents 22 Fulfilling Environmental laws and regulations 23 Future legislation or regulation requirements 24 Environmental taxes 25 CO2 (eq.) emissions trading, carbon permits, credits, allowances	<b>Company Specific Environmental Performance</b>
26 End of life treatment 27 Producers Responsibility (ERP) 28 Integrated Product Policy 29 Environmental regulations facing customers/markets 30 Customer demands 31 Life Cycle Assessments (LCA) 32 Design for the Environment (DfE) 33 Eco-efficiency 34 Recycling	<b>Product/Market Specific Environmental Performance</b>
35 Conservation of natural resources / cost of scarcity 36 Deforestation 37 Biodiversity / ecology 38 Climate change / Global warming 39 Toxicity and health	<b>Environmental Impact Category</b>



## Environmental Aspect Score Distribution for all Industries

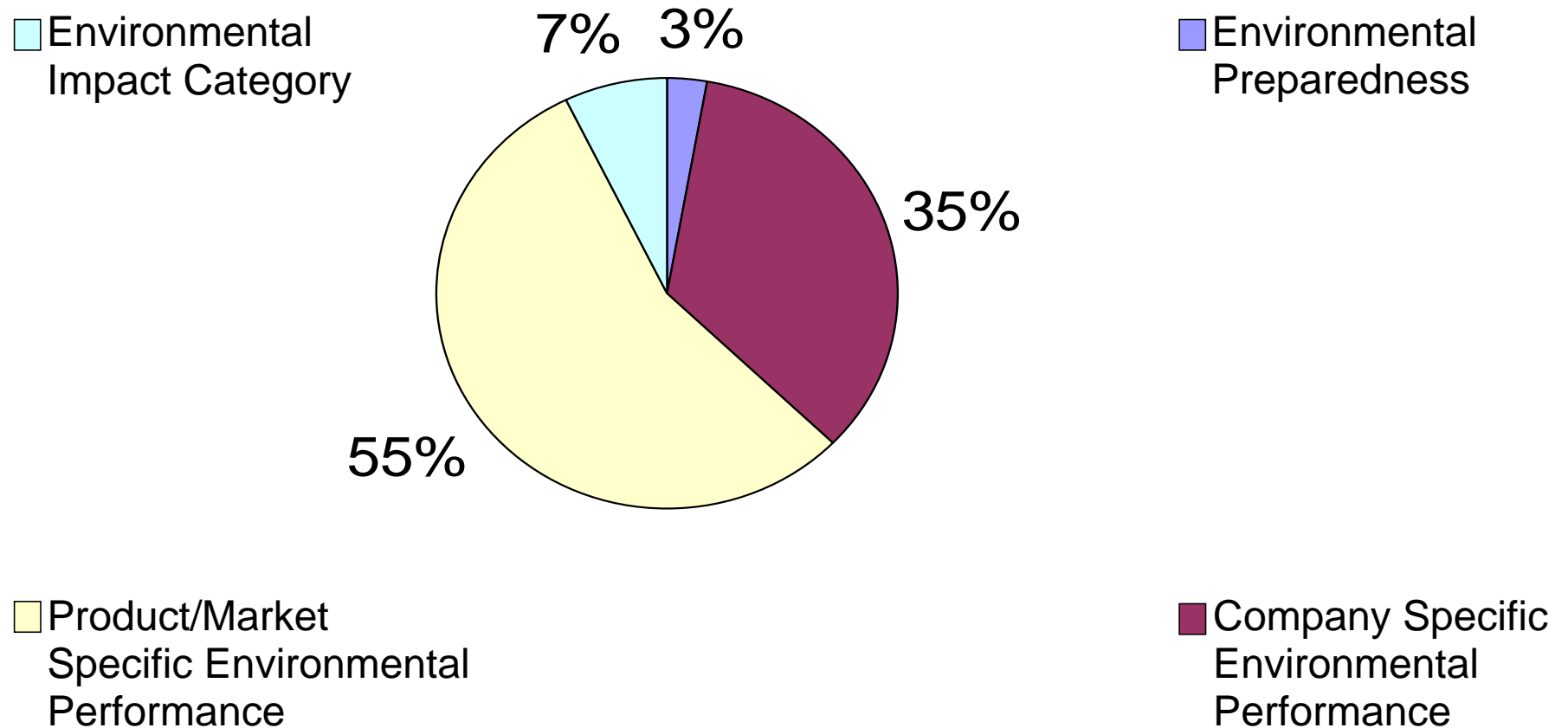


Figure 26 Distribution of company environmental aspect scores in financial analyst reports.

## 12.3 Industry and company distribution of environmental information in financial analyst research reports

As just mentioned in the end of Section 12.2 regarding the environmental item *Conservation of natural resources / cost of scarcity* (within the environmental aspect *Environmental Impact Category*) that it is dealt with differently by financial analyst reports, depending on which company and adhering industry the financial assessment cover.

In figure 27 below, it is displayed how differently environmental items are dealt with in financial analyst research reports depending on which industry the analysed company<sup>17</sup> belongs to. Analyst reports on firms from subsequent three industries – Chemicals, Electrical Equipment and Paper & Forest Products – are, hence, dealt with.

The average score per environmental item and per financial analyst report, displayed below (Figure 27), are furthermore clustered along their environmental aspects, displayed in the ESG framework (table 12) above, to indicate the focus towards *Environmental Preparedness*, *Company Specific Environmental Performance*, *Product/Market Specific Environmental Performance* and *Environmental Impact Category*. Further, in figure 28 and figure 29, the environmental information is displayed as environmental aspect score (clustered environmental items) distribution for industries in figure 28 and for companies in figure 29.

### Environmental Preparedness aspect – Figure 28

If discussing the environmental items per cluster group, environmental aspects we see clearly that for all industries there is almost no information on items belonging to the *Environmental Preparedness* aspect present in the analyst reports. The maximum achievable score per item is 3 and the top disclosed item (average) has the score 0.12 and three other ones about half that score, but most items receive scores close to 0. Chemicals contains some information on *Implementing environmental management along the value chain* and reports concerning both, but to a even lesser extent, Chemicals and Forest & Paper Products have information on *Managing environmental risk*.

### Company Specific Environmental Performance aspect – Figure 28

The *Company Specific Environmental Performance* aspect is a rather well represented environmental aspect in the financial analyst reports for all three industries of this study. The maximum achievable score per item is 3 and the top disclosed item (average) has the score 0.31, another one slightly below then followed by several items receiving scores between 0.18 to 0.25. In fact, no environmental item has totally been omitted from financial analyst reports. Reports on all three industries contain considerable information on *Future legislation or regulatory requirements*, *Fulfilling environmental laws and regulation* and *Litigation and liabilities*. Reports on Chemicals and Paper & forest products have all information on various emissions – *Air emission*, *Water discharge* and *Solid waste disposal*. The item *Site restoration* is disclosed in reports on Electrical Equipment industry and the item *Carbon (eq.) emissions trading and carbon permits, credits, allowances* is disclosed by the industries Electrical Equipment and Paper & Forest Products.

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<sup>17</sup> *Analysed company*, refers to companies that are analysed in the financial analyst research reports and in this study the companies described in these analyst reports all belong to three selected industries.

### **Product/Market Specific Environmental Performance aspect – Figure 28**

This aspect, *Product/Market Specific Environmental Performance*, is the most readily disclosed environmental aspect where some of the environmental items are very well disclosed compared to other environmental items of the applied ESG Framework of this study. The maximum achievable score per item is 3 and the top disclosed item (average) has the score 1.62 which is *Environmental regulations facing the customers/markets* in reports covering the Electrical Equipment industry and the second most covered item in reports on that industry is *Customer demands* – 1.33. For reports on the Forest & Paper Products *Recycling* is the most disclosed item with the score 1.4. Then, following these in the industries of Chemicals and Electrical Equipment *Eco-efficiency* is a highly disclosed environmental item, scoring 0.46 and 0.43 respectively. Items almost omitted in the financial analyst reports are *End-of-life treatment*, *Producer responsibility*, *Integrated product policy* and *Life cycle assessments (LCA)*.

### **Environmental Impact Category aspect – Figure 28**

Most of the items in the *Environmental Impact Category aspect* are not dealt with to any greater extent in the financial analyst reports except for one. The maximum achievable score per item is 3 and the top disclosed item (average) has the score 0.51. This top scoring item is *Toxicity and health* and is foremost dealt with in financial analyst reports covering the Chemicals industry. Analyst reports on the Forest & Paper Products industry scores 0.16 on the *Conservation of natural resources / cost of scarcity* item. Otherwise the items constituting the environmental category of impacts – i.e. *Deforestation*, *Biodiversity / Ecology and Climate change / Global warming* – are practically absent from the financial analyst reports.

### **Environmental Aspects in Financial Analyst Reports per Industry and Company**

The distribution of environmental scores differs not only between the analyst reports of the three industries constituting this study, but dissimilarities also occur between the distribution of aspects in analyst reports of an industry and the reports covering the company that belongs to that industry. These variations are displayed below comparing the distribution of environmental aspects of three the industries Chemicals, Electrical Equipment and Paper & Forest Products to the three corporations Akzo Nobel, ABB and SCA, respectively.

The environmental aspect score distributions for those financial analyst reports that contain environmental information on the three industries and three firms of this study are best viewed in figures 28 and 29 below concerning the aspects and table 13 below concerning the items.

## Average Environmental Item Score per Report

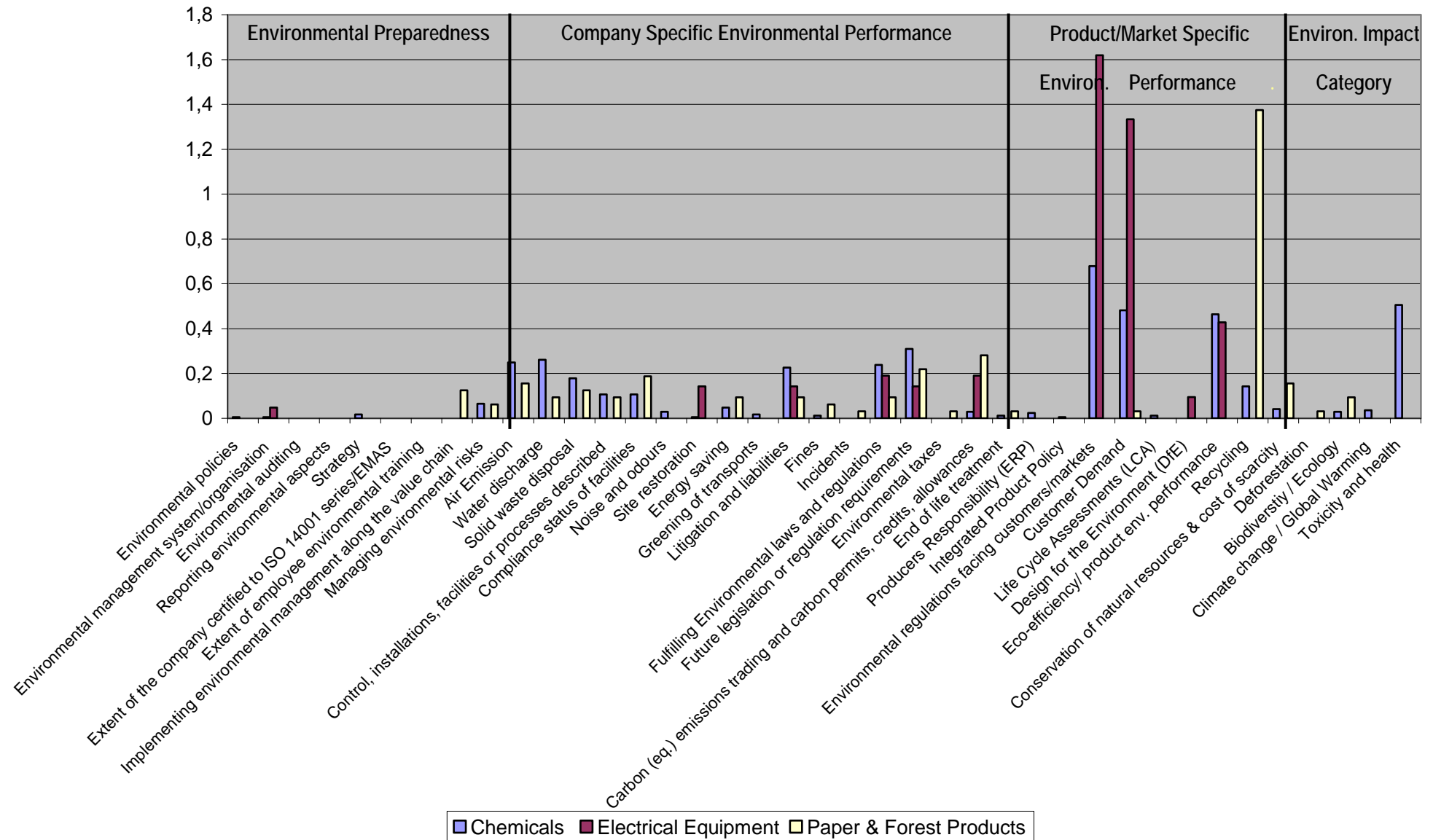


Figure 27 Average company environmental items scores per industry in financial analyst reports.

## **Comparing Chemicals Industry to Akzo Nobel**

### *Chemicals Industry*

#### Environmental Preparedness:

- ✓ Of the financial analyst research reports containing environmental information merely 2 percent deals with Environmental Preparedness aspects. The item most enclosed is Managing Environmental Risks.

#### Company Specific Environmental Performance

- ✓ 42 percent of the financial analyst reports that contain environmental information deals with the Company Specific Environmental Performance aspect. The items most enclosed are meeting current and future legislation requirements, litigation and liabilities, and various emissions from company sites.

#### Product/Market Specific Environmental Performance

- ✓ The Product/Market Specific Environmental Performance aspect is dealt with by 42 percent of the financial analyst reports that contain environmental information. The items most enclosed are environmental legislation facing customers and customer demands items followed by the item on eco-efficiency and product performance.

#### Environmental Impact Category

- ✓ 14 percent of the financial analyst reports containing environmental information deals with Environmental Impact Category. The most enclosed item is Toxicity and Health.

### *Akzo Nobel*

Compared to its industry – Chemicals – the financial analyst reports on Akzo Nobel have a considerably higher focus on the Company Specific Environmental Performance aspect relatively the other environmental aspects. The Company Specific Environmental Performance constitutes 85% of total score of the environmental information disclosed in reports on Akzo Nobel. The analyst reports on Akzo Nobel contain somewhat lesser information on the Environmental Impact Category aspect compared to reports on its industry. The aspect Environmental Preparedness is totally absent in the reports on Akzo Nobel while the aspect is minimally treated in reports on the industry.

## **Comparing Electrical Equipment Industry to ABB**

### *Electrical Equipment Industry*

#### Environmental Preparedness:

- ✓ Of the financial analyst research reports containing environmental information merely 1 percent deals with Environmental Preparedness aspects. The item most enclosed is Environmental management system/organisation.

#### Company Specific Environmental Performance

- ✓ 19 percent of the financial analyst reports that contain environmental information deals with the Company Specific Environmental Performance aspect. The items most enclosed are meeting current and future legislation requirements, litigation, carbon emissions trading and control facilities.

#### Product/Market Specific Environmental Performance

- ✓ The Product/Market Specific Environmental Performance aspect is dealt with by 80 percent of the financial analyst reports that contain environmental information. The items most enclosed are Environmental legislation facing customers and Customer demands items followed by the item on Eco-efficiency and Design for the environment.

#### Environmental Impact Category

- ✓ No financial analyst reports containing environmental information deals with Environmental impact category.

### *ABB*

Compared to its industry – Electrical Equipment – the financial analyst reports on ABB have a lesser degree of attention on the Product/Market Environmental Performance aspect relatively the other environmental aspects. The Product/Market Environmental Performance aspect in analyst reports on ABB is, however, by far the most covered environmental aspect and constitute 60% of the total score of the environmental information disclosed in reports on ABB. The analyst reports on ABB contain considerably more information on the Company Specific Environmental Performance aspect compared to its industry. The Environmental Preparedness aspect is almost absent from the analyst reports on ABB and the aspect Environmental Impact Category is omitted from the reports which is rather similar to the score of the analyst reports on the industry.

### **Comparing Paper & Forest Products to SCA**

#### *Paper & Forest Products Industry*

##### Environmental Preparedness:

- ✓ Of the financial analyst research reports containing environmental information merely 5 percent deals with Environmental Preparedness aspects. The item most enclosed is Implementing environmental management along the value chain.

##### Company Specific Environmental Performance

- ✓ 46 percent of the financial analyst reports that contain environmental information deals with the Company Specific Environmental Performance aspect. The items most enclosed are carbon emissions trading, meeting current and future legislation requirements, Compliance status of facilities and control equipment, and various emissions from company sites.

##### Product/Market Specific Environmental Performance

- ✓ The Product/Market Specific Environmental Performance aspect is dealt with by 41 percent of the financial analyst reports that contain environmental information. The item most enclosed is Recycling, by far, then after considerable drop followed by the items Customer demands and End-of-life treatment.

##### Environmental Impact Category

- ✓ 8 percent of the financial analyst reports containing environmental information deals with Environmental Impact Category. The most enclosed item is Conservation of natural Resources / cost of scarcity.

### *SCA*

Compared to its industry – Paper & Forest Products – the financial analyst reports on SCA have a considerably higher focus on the Product/Market Specific Environmental Performance aspect relatively the other environmental aspects. The Product/Market Specific Environmental Performance constitutes 67% of total score of the environmental information disclosed in reports on Akzo Nobel. The analyst reports on SCA contain no information on the Environmental Impact Category aspect compared to reports on its industry (8%). The aspect Environmental Preparedness is totally absent in the reports on SCA too, while the aspect is to a low extent covered in reports on the industry (5%).

## Environmental Aspect Score Distribution per Industry

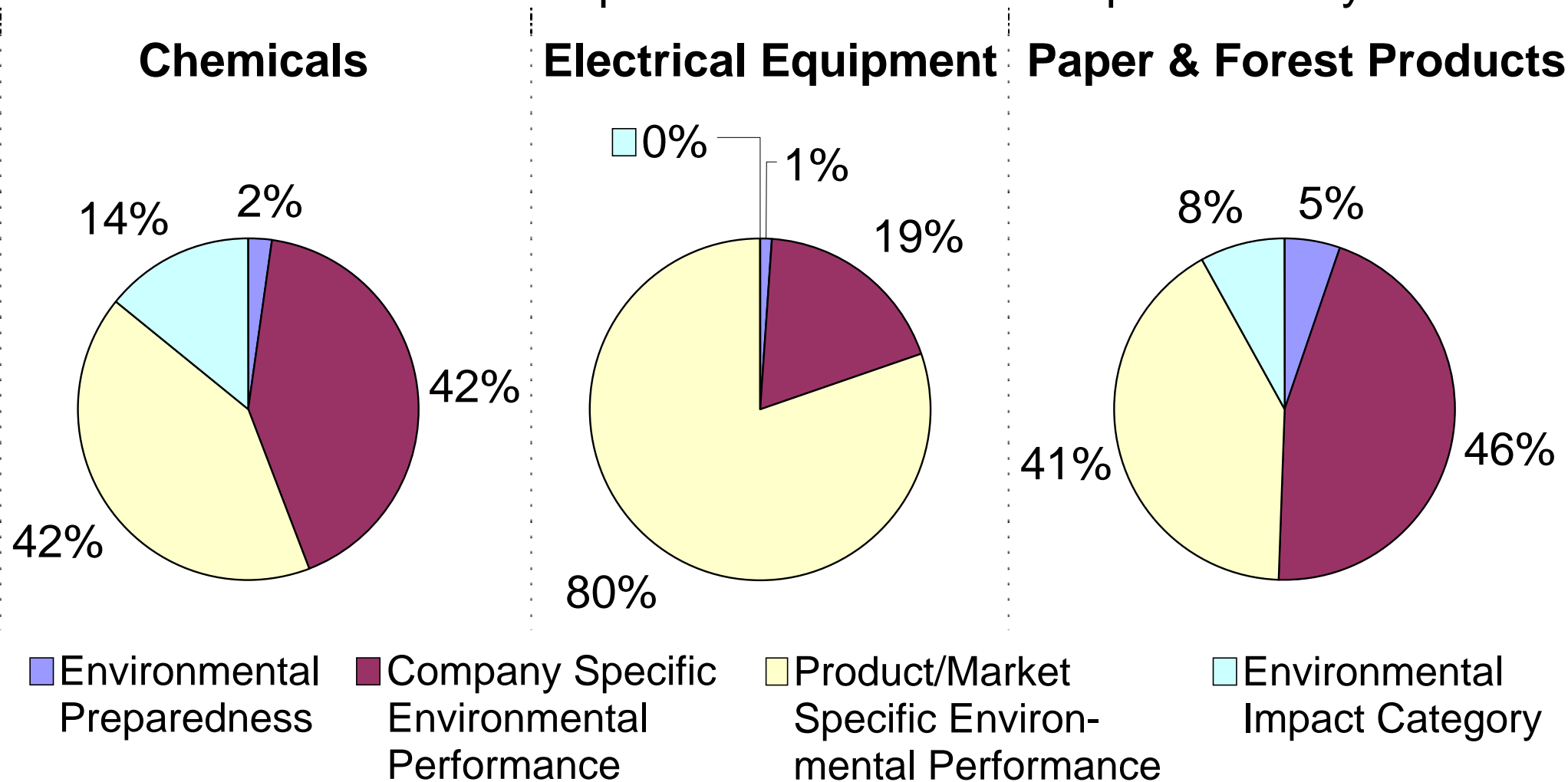
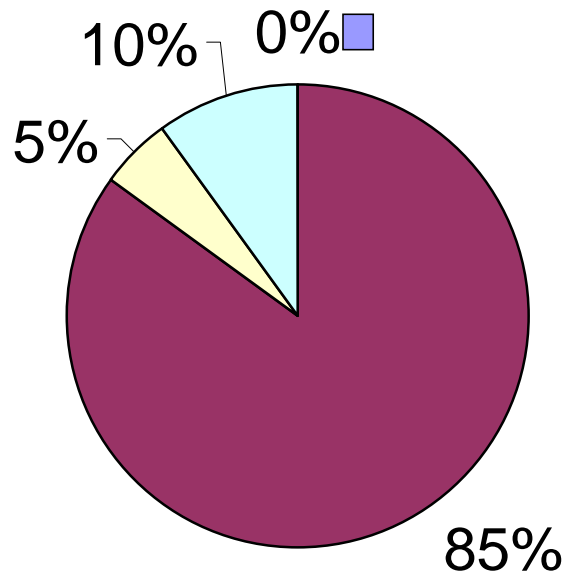


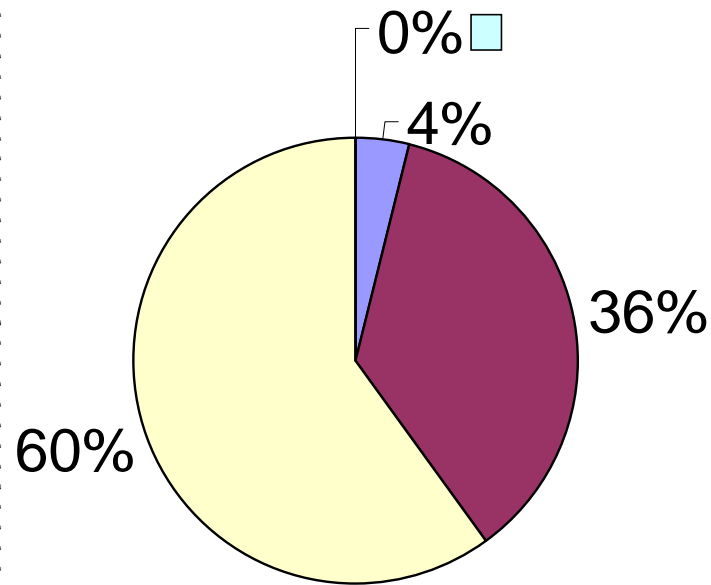
Figure 28 Distribution of company environmental aspect scores per industry in financial analyst reports.

## Environmental Aspect Score Distribution per Company

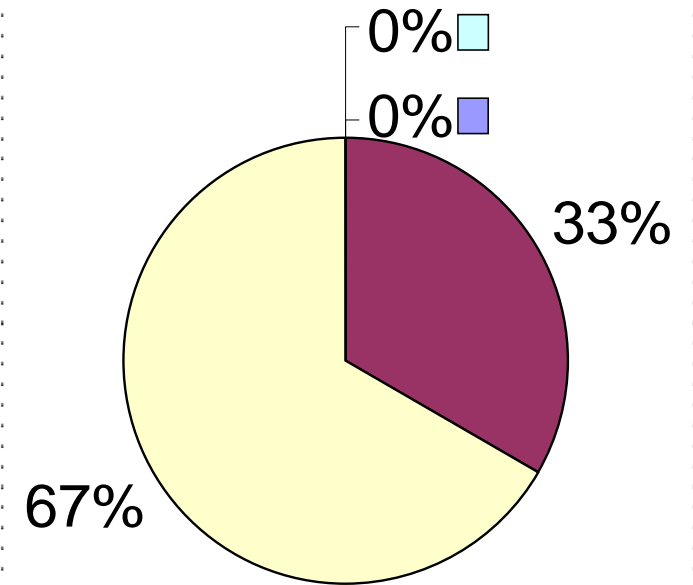
### Akzo Nobel (incl. ICI)



### ABB



### SCA



■ Environmental Preparedness

■ Company Specific Environmental Performance

■ Product/Market Specific Environmental Performance

■ Environmental Impact Category

Figure 29: Distribution of company environmental aspect scores per firm – ABB, Akzo Nobel and SCA – in financial analyst reports.



Table 13 Average company environmental item scores per industry in financial analyst reports.

Average Environmental Item Score per Financial Analyst Report					
	Environmental Item	Chemistry	Electrical Equipment	Paper & Forest Products	All three industries
	<b>Score range: 0 to 3</b>				
1	Environmental policies	0,0060	0	0	0,0045
2	Environmental management system/organisation	0,0060	0,048	0	0,0090
3	Environmental auditing	0	0	0	0
4	Reporting environmental aspects	0	0	0	0
5	Strategy	0,018	0	0	0,014
6	Extent of the company certified to ISO 14001 series/EMAS	0	0	0	0
7	Extent of employee environmental training	0	0	0	0
8	Implementing environmental management along the value chain	0	0	0,12	0,018
9	Managing environmental risks	0,065	0	0,062	0,059
10	Air Emission	0,25	0	0,16	0,21
11	Water discharge	0,26	0	0,094	0,21
12	Solid waste disposal	0,18	0	0,12	0,15
13	Control, installations, facilities or processes described	0,11	0	0,094	0,095
14	Compliance status of facilities	0,11	0	0,19	0,11
15	Noise and odours	0,030	0	0	0,023
16	Site restoration	0,0060	0,14	0	0,018
17	Energy saving	0,048	0	0,094	0,050
18	Greening of transports	0,018	0	0	0,014
19	Litigation	0,23	0,14	0,094	0,20
20	Fines	0,012	0	0,062	0,018
21	Incidents	0	0	0,031	0,0045
22	Fulfilling Environmental laws and regulations	0,24	0,19	0,094	0,21
23	Future legislation or regulation requirements	0,31	0,14	<b>0,22 C</b>	0,28
24	Environmental taxes	0	0	0,03	0,0045
25	CO2 (eq.) emissions trading, carbon permits, credits, allowances	0,030	0,19	<b>0,28 B</b>	0,081
26	End of life treatment	0,012	0	0,031	0,014
27	Producers Responsibility (ERP)	0,024	0	0	0,018
28	Integrated Product Policy	0,0060	0	0	0,0045
29	Environmental regulations facing customers/markets	<b>0,68 A</b>	<b>1,62 A</b>	0	<b>0,67 A</b>
30	Customer demands	<b>0,48 C</b>	<b>1,33 B</b>	0,031	<b>0,50 B</b>
31	Life Cycle Assessments (LCA)	0,012	0	0	0,0090
32	Design for the Environment (DfE)	0	0,095	0	0,0090
33	Eco-efficiency	0,46	<b>0,43 C</b>	0	<b>0,39 C</b>
34	Recycling	0,14	0	<b>1,4 A</b>	0,31
35	Conservation of natural resources / cost of scarcity	0,042	0	0,16	0,054
36	Deforestation	0	0	0,031	0,0045
37	Biodiversity / ecology	0,030	0	0,094	0,036
38	Climate change / Global warming	0,036	0	0	0,027
39	Toxicity and health	<b>0,51 B</b>	0	0	0,38
	<b>Score Range: 0 to 100 %</b>				
	Business opportunities from environmental aspects	85 %	76 %	53 %	79 %

A: The most reported item in financial analyst reports on firms in the industry.

B: The second most reported item in financial analyst reports on firms in the industry.

C: The third most reported item in financial analyst reports on firms in the industry.

## 12.4 The business opportunity perspective in financial analyst research reports

Earlier research suggests that environmental information to a larger extent is focused on the negative risk associated aspects while it to a lesser degree deals with the opportunity side associated with the environmental aspects of the analysed firm. The experimental study by Chan and Milne (1999) indicates that investors react strongly and negatively to information on poor environmental performance. Information on positive environmental performance show, on the other hand, no significant reaction among investors. Aerts *et al.* (2004a) detected in their environmental disclosure study that North American companies operate in a more regulated environment compared to the European counterparts and, hence, report more on risk-related environmental aspects. Concerning information on sustainable development and environmental management the contrary was detected which is information that is permeated through voluntary reporting that is not regulated as the fiscal report is. The results in Nilsson *et al* (2008) and Nilsson (2008) indicate that the negative environmental information – downside information – is more frequently included in the financial analyst reports than positive environmental information – upside information. Hunt and Grinnell (2004) show in their survey research that analysts use environmental information foremost for evaluating downside risks.

Information concerning environmental liabilities, risk provisions in Nilsson *et al* (2008) and Nilsson (2008) is the most important items that often come in quantitative terms both in reporting due to reporting requirements in regulation and, thus, also in financial analyst reports. Also emissions from the company itself is reported upon since there are requirements to meet emission targets and, hence, also reported upon by the analysts. These aspects, as discussed above are dealt with in analyst reports for both the *Chemical* and *Oil/Gas* industries. The analysts also tend to focus on the environmental information about the firm's products, especially in the chemical industry, since increasingly product environmental aspects are becoming more important for the competitiveness of firms. The Nilsson *et al* (2008) and Nilsson (2008) found product environmental information to be more readily expressed for the *Chemical* industry while the *Oil/Gas* industry financial analyst reports rather concern general market development from an environmental perspective, where the products are more homogenous. Information about costs for land remediation and contamination was, furthermore, important for the analysts reporting on the *Oil/Gas* industry. Summarising the inclusion of risk and business information in the analyst reports of the Nilsson studies the downside risk-related information is considerably more reported on by analysts. The down-side risk is, if looking at the individual industries, somewhat more important for the *Oil/Gas* industry, while the upside-related environmental information, especially about products, are more relevant for companies in the *Chemical* industry. However, according to the Nilsson studies the upside-related information is considerably behind the downside supplied information in financial analyst reports for the two industries *Chemical* and *Oil/Gas*.

The Nilsson *et al* (2008) paper, furthermore, discusses the lack of strong support as somewhat surprising because of the very costly consequences of downside risks. A decade ago, Pettersson and Earl (1998) on the analyst community in London detected that regarding environmental information **General Fund Analysts** prefer financially linked data while **Ethical Fund Analysts** focus on *environmental performance* and *risk & compliance data*. The cluster of **Credit and Insurance Risk analysts** show no clear cut preferences, but a slight overweight towards *finance data* as well as *risk & compliance data*. **No analysts** paid much attention to *stakeholder involvement* and *environmental opportunities*.

So, the study by Pettersson and Earl (1998) shows that analysts in London asked for quantitative data to be included in corporate reports. To them, the important data describe risks, costs and strategies in measurable terms. The analysts did, nevertheless, not appear to appreciate information about environmental opportunities to any great extent. The value of such information was not realized by these actors. Cerin (2002a; 2006a; cf Cerin and Laestadius, 2005) argue, however, that in order to estimate the major financial risk of a corporation it is vital to place the company within its value chain to estimate dependencies that could affect the company's business. When looking at carbon emissions, for instance, the scope may follow A) the judicial entity enabling national aggregations as well as the direct financial risk due to possible environmental policy action to be ascertained. The other scope follow B) the life-cycle of the products of the companies owning the design, thereby elucidating the companies' overall financial risks as well as the opportunities presented throughout the entire value chains, on which it is dependent. For a company producing active products (i.e. consuming energy during use) or having energy intensive resource extraction these parts of the value chain will truly be determining the competitiveness of the firm when new policy instruments on carbon emissions are introduced and not the emissions from the company's judicial borders or bought energy used in office and assembly facilities (Cerin, 2002b). Cerin found, furthermore, that if just taking emissions from the judicial entities into account the carbon dioxide equivalent emissions per turnover from manufacturing companies of vehicles, white goods and telecom equipment would be fairly similar if the firms are based within the same country. Firms from these three sub-industries have, however, immensely different sensitivity towards greenhouse gas emissions. Regulatory changes or alterations in customer preferences along the value chains of these three sub-industries will affect respective firms immensely different – some will suffer severely while others will merely experience increased business opportunities from trade moving from one sector to another.

This has been called upon in journals on economics and law for designing effective policy instruments that goes beyond the judicial entity of the firm (Cerin and Karlson, 2002 on business incentives from introducing property rights to GHG emissions; Cerin, 2006d on bringing economic opportunity into line with environmental influence; 2006c on introducing e.g. GHG emissions value chain stewardship to the vehicle manufacturers) and has recently been adopted by legislation aiming at delimiting the emissions from the vehicle manufacturers' product portfolios driven by a proposal by the European Commission (EC, 2008) following the proposal by seven Directorates General (EC, 2007). Quite uniquely the European Commission has presented a regulatory proposal that now has passed through the European Parliament. The approaching legislation will put a penalty tax on the car producer whose registered (that is sold) car fleet during a year in the European Union average vehicle GHG emissions per distance driven exceeds a set limit. In the short term a penalty has to be paid for each exceeding 130 g/100km and the long term target for 2020 will be considerably tougher (95 g/100km) than the ones set for 2012. The environmental performance within the judicial borders of the firm is not really relevant for estimating the future profitability of the firm when such noticeable alterations in the prerequisites for a firm's products occur.

The Swedish Society for Financial Analysts have, similarly, expressed the fundamental role environmental issues may have in developing products that meet the demands of concerned and environmentally regulated customers, but also as jeopardising the sole existence of the company itself if not having the systems for environmental and social aspects in place within the own organisation or upstream (SFF, 2008).

Drawing from the experiences in the paragraphs above in this section we see that crucial aspects when determining business opportunities of firms – as well as the company risk – is to incorporate

the value chain of the analysed company to retrieve a more holistic picture on the determinants of the firm's future cash-flows and profits. Below, the inclusion of business opportunity aspects of the analysed firms is discussed. Comparisons are carried out between industry and firms; namely between Chemicals and Akzo Nobel, between Electricals and ABB and between Paper & Forest Products and SCA on the business perspective in respective reports.

### All three Industries – Chemicals, Electrical Equipment and Paper & Forest Products

Of the financial analyst research reports containing environmental information 67 percent of them dealt with business opportunities without talking about environmental risks that are linked to the analysed firm in question, see table 14 below. An additionally 12 percent of the analyst reports dealt with both business opportunities and risks that are associated with the firm. Thereby, 79 percent of the analyst dealt with environmental business opportunities in their research reports. 21 percent of the financial analyst reports contained only environmental information from a risk perspective without looking into the opportunity side of environmental issues.

Table 14 Percent of financial analyst reports displaying business opportunities from environmental aspects.

Industry/Company	Financial Analyst Reports Containing information on	
	business opportunities from Environmental Aspects	business opportunities as well as business risks from environmental aspects
All three Industries	67 %	79 %
* Chemicals	68 %	85 %
* * Akzo Nobel (incl. ICI)	29 %	29 %
* Electrical Equipment	76 %	76 %
* * ABB	60 %	60 %
* Paper & Forest Products	47 %	53 %
* * SCA	50 %	75 %

The overall results from the financial analyst reports covering the three industries – Chemicals, Electrical Equipment and Paper & Forest Products – is that financial analysts use environmental information as being a source for assessing business opportunities in four out of five cases, rather than being a source for risk measure of the analysed firm.

### Comparing Chemicals Industry to Akzo Nobel

#### Chemicals Industry

Of the financial analyst research reports containing environmental information 68 percent of them dealt with business opportunities without talking about environmental risks that are linked to the analysed firm in question. In addition 17 percent of the analyst reports dealt with both business opportunities and risks that are associated with the firm. Thereby, 85 percent of the analysts dealt with environmental business opportunities in their research reports. 19 percent of the financial analyst reports contained only environmental information from a risk perspective without looking into the opportunity side of environmental issues.

#### Akzo Nobel

The reports on Akzo Nobel that contain environmental information have a higher degree of information dealing with business risks from environmental aspects and a lesser amount of business opportunity information. The opportunity perspective for ABB constitutes 29 percent of all disclosed environmental information while the business risks represent the remaining 71 percent.

No reports were found to deal with both business opportunities and risks linked to their disclosed environmental information.

### **Comparing Electrical Equipment Industry to ABB**

#### *Electrical Equipment Industry*

Of the financial analyst research reports containing environmental information 76 percent of them dealt with business opportunities without talking about environmental risks that are linked to the analysed firm in question. An additionally 2 percent of the analyst reports dealt with both business opportunities and risks that are associated with the firm. Thereby, 78 percent of the analysts dealt with environmental business opportunities in their research reports. 22 percent of the financial analyst reports contained only environmental information from a risk perspective without looking into the opportunity side of environmental issues.

#### *ABB*

The reports on ABB that contain environmental information have a higher degree of information dealing with business risks from environmental aspects and a lesser amount of business opportunity information compared to industry average. Still, the business opportunity side constitutes the lion part of disclosed environmental information in analyst reports on ABB. The opportunity perspective for ABB constitutes 60 percent of all disclosed environmental information while the business risks represent the remaining 40 percent. No reports were found to deal with both business opportunities and risks linked to their disclosed environmental information.

### **Comparing Paper & Forest Products Industry to SCA**

#### *Paper & Forest Products Industry*

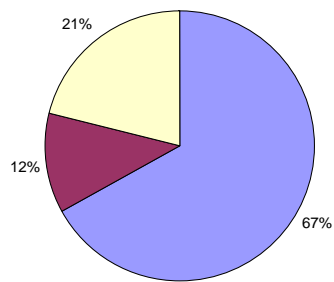
Of the financial analyst research reports containing environmental information 47 percent of them dealt with business opportunities without talking about environmental risks that are linked to the analysed firm in question. An additionally 6 percent of the analyst reports dealt with both business opportunities and risks that are associated with the firm. Thereby, 53 percent of the analysts dealt with environmental business opportunities in their research reports. 47 percent of the financial analyst reports contained only environmental information from a risk perspective without looking into the opportunity side of environmental issues.

#### *SCA*

The reports on SCA that contain environmental information have a lower degree of information dealing with business risks from environmental aspects, but about the same amount of business opportunity information. The opportunity perspective for SCA constitutes 50 percent of all disclosed environmental information while the business risks represent 25 percent. The remaining 25 percent of the reports that contain environmental information deal with it both from a business opportunity as well as from a business risk perspective.

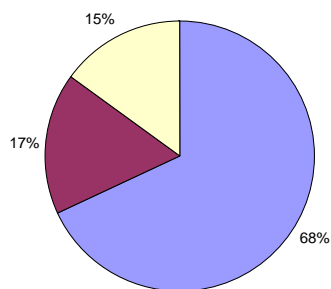
**All three Industries**

- Financial Analyst Reports Containing Information on



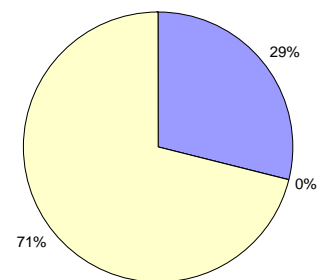
**Chemicals**

- Financial Analyst Reports Containing Information on



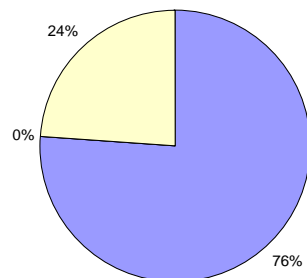
**Akzo Nobel (incl. ICI)**

- Financial Analyst Reports Containing Information on



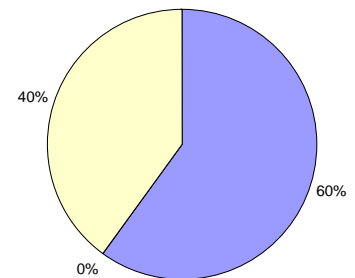
**Electrical Equipment**

- Financial Analyst Reports Containing Information on



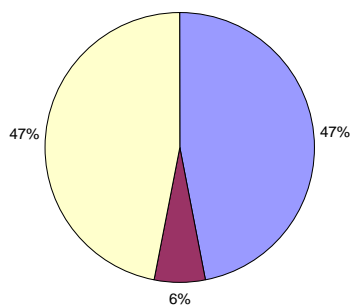
**ABB**

- Financial Analyst Reports Containing Information on



**Paper & Forest Products**

- Financial Analyst Reports Containing Information on



**SCA**

- Financial Analyst Reports Containing Information on

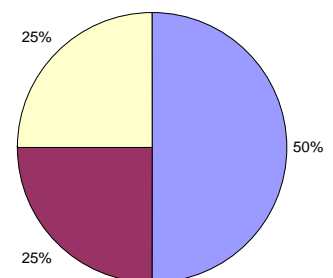


Figure 30: Percent of financial analyst reports displaying business opportunities from environmental aspects.

## 13 Citations from financial analyst reports on environmental matters

The financial analyst reports that have been assessed in this study empirically, that do contain environmental information, do it predominantly from a product perspective that is foremost concerned with business opportunities from the analysed firms' technologies and product portfolios. In section 10 above we see that 55 percent of the financial sell-side analyst reports that contain environmental information do it from a product and market perspective on environmental performance while merely 35 percent of the analysts relates to the environmental performance of the actual company, dealing with issues such as emissions and litigations.

In this section, some quotes from the analyst reports will be displayed to provide some examples on how the financial analysts formulate their texts containing environmental information. Particularly quotes that deal with the product perspective such as environmental product performance, meeting customer demands or legislation facing customers will be illuminated. Besides, analyst descriptions that deal with emissions and litigations from company sites as well as their view on need for mergers or acquisitions due to increasingly environmental standards, demands or resource deficiencies are also cited.

The following quote regarding ABB deals with how ABB's electrical infrastructure products fulfill customer needs to replace their own infrastructure, increasing fuel prices and environmental regulation and deregulation of electrical infrastructure (Heymann and Schoff, 2006):

*“ABB is providing customers in these regions with grid systems (HVDC, HVDC Light, HV Cables, Semiconductors), network management and utility communications systems, electrical and control systems for power plants, substation automation, and turnkey substations and services. We believe that demand for this array of products and services is acyclical and will be driven by the need to replace aging infrastructures, create new transmission to service planned future generation, high fuel prices, environmental requirements, and deregulation of the electrical infrastructure.”*

Heymann and Schoff at Prudential Equity Group (2006)

The following quote regarding ABB deals with how ABB's oil & gas infrastructure products are well positioned in the increasing complexity and expenditures facing ABB's customers as a result of declining crude quality and environmental legislation (McMahon and Lin, 2004):

*“ABB's position as provider of automation solutions to the oil & gas industry will benefit from increasing complexity and could receive a larger share of expenditures. For example, ABB's position as provider of deepwater solution is quite strong. Downstream: high refining margin, declining crude quality, and environmental legislation will drive capex.”*

McMahon and Lin at Bernstein Research (2004)

The following quote regarding SCA deals with how SCA is less exposed to the volatility of raw material (wood) prices due to their value chain integration by having supplies from own forests as

well as recycling facilities down to non-cyclical products like hygiene products to the retail market (Manning and Lorenzen, 2005):

*“SCA’s own forest holdings and recycling facilities, reducing exposure to shifts in raw material prices in the market and raising efficiency and quality in supply.”*

*“SCA mitigates these fluctuations through vertical integration from ownership of forest and own waste paper collection to the finished hygiene or packaging product. Its net exposures to market prices are therefore generally only a fraction of total production.”*

Manning and Lorenzen at ABN AMRO (2005)

The following quote regarding SCA deals with how merely 25% of SCA’s movements in earnings come from changes in economic aspects like raw material aspects while the corresponding figure for the sector is up to 100% (Kjellberg and Blackshields, 2002):

*“In a weak economy raw materials are normally inexpensive and in a strong economy raw material prices are high. On a net basis we estimate that 25% of SCA’s underlying earnings movements are explained by changes in economic conditions. For other companies in the sector, changes in economic conditions explain 80–100% of the underlying movements in earnings.”*

Kjellberg and Blackshields at Credit Suisse (2002)

A considerable amount of the financial analyst reports, covering the Chemicals industry, that contain environmental information do it from a resource scarcity and the resulting escalating costs as well as from a legislative perspective, increasingly leading to a higher demand for a less toxic product portfolio from the industry’s customers. In this study, such examples on environmental information are, however, scares in the analyst reports on Akzo Nobel compared to their industry peers. This is, furthermore, coherent with the findings in section 10 where it is found that of the financial analyst reports that contained environmental information on Akzo Nobel 71 percent of them had a risk perspective linked to the environmental aspects displayed. The environmental risk perspective figure for the chemistry industry analyst reports in the study constitutes merely 32 percent of the analyst reports that contain environmental information. Therefore, citations from industry peers to Akzo Nobel are included below to provide examples on how financial analysts are reporting on environmental issues as business opportunities as well as from a perspective that includes the products and regulation involving them.

The following quote regarding BASF deals with how BASF is saving expenditures through energy and infrastructure savings as well as through wastewater treatment. These savings are quantified fiscally (Faitz, 2003):

*EUR300m through logistical savings (pipelines instead of trucks), EUR150m through energy savings (using wastewater steam from one plant to power a turbine at another), and EUR50m through infrastructure savings (centralized services like fire department, wastewater treatment, catering). Currently, BASF puts total global savings through Verbund at EUR900m per year.*

Faitz at Julius Bär (2003)



The following quote regarding BASF deals with how an acquisition by BASF is founded growth opportunities as well as on attaining the stricter emission control legislation that may lead to market growth in emission catalysts (Dunwoodie and Satchell, 2006):

*“It is a growth-driven acquisition, not one based on synergies, which the company indicated would only be modest. ... these areas offer good opportunities for growth with changes in crude oil quality, and demand for higher yield, giving good growth in chemical and refinery catalysts. In addition, more strict emission control legislation is leading to attractive market growth in emission catalysts (5% market growth in the next few years is forecast).”*

Dunwoodie and Satchell at ING (2006)

The following quote regarding Danaher deals with how Danaher’s products meet environmental legislative demands facing customers’ fuel stations. The citation also illuminates the size of those services in fiscal numbers and as percentage of the segment turnover (Duignan and Antezano, 2004):

*“Demand also is driven by EPA requirements for reduced emissions. Danaher can provide the necessary products to fully automate a fuel station and meet EPA requirements. Its services, which include monitoring compliance with EPA regulations and filing the necessary paperwork to various government overseers, are mostly provided to large retail chains. These services represent about \$150 million in annual revenue, or about 23% of total segment sales.”*

Duignan and Antezano at Bear Sterns (2004)

The following quote regarding Danaher deals with how the demand for Danaher’s products is driven by environmental legislation like the US EPA. This regulatory driven demand is estimated to constitute 30% of the demand for the company’s products (Khoshaba *et al.*, 2003):

*“The main drivers of demand for Retail/Commercial Petroleum equipment include environmental regulations, new site construction, infrastructure improvement projects as well as replacement and maintenance. We believe that nearly 30% of demand for the company’s products is driven by a wide range of regulatory requirements, such as those mandated by the U.S. Environmental Protection Agency (EPA), as well as state and local governments.”*

Khoshaba, Athavale and Kabili at Deutsche Bank (2003)

The following quote regarding Eaton Corporation deals with how the fuel economy and emission requirements facing customers are driving product development in the industry. Eaton Corporation’s managerial understanding in innovation and technological development have resulted in a \$ 20 million outgrow its industry peers. Future emissions regulations will force the industry to into mergers and acquisitions (Armstrong and Fleischer, 2006):

*“The forces driving strategic product development decisions in this segment are fuel economy, emissions requirements, and safety. Accordingly, Eaton must use technological expertise to develop innovative products that enable customers to meet these requirements. Eaton’s technological innovation in recent years enabled this segment to outgrow its market by \$20 million in 2005. Management attributes this achievement to new products that improve fuel economy, penetration in new market segments, and truck-related business.”*

*“Looking forward, we believe that important areas of growth (and/or acquisition) will be products that help manufacturers to meet the exceedingly tough NAFTA emissions requirements that become effective in 2010.”*

Armstrong and Fleischer at Friedman Billings Ramsey Research (2006)

The following quote regarding Du Pont deals with how Du Pont has achieved an agreement with US EPA to delimit its nondisclosures merely to civil law litigations, which the firm now has reserved \$ 15 million. Du Pont is seen as taking a proactive role, seeking toxic substance EPA regulation on the unregulated product in question (Ahmed, 2006):

*“DuPont agreed in principle with the EPA regarding the company’s liability regarding PFOA. The agreement resolved allegations of both ancient and recent nondisclosures, leaving for litigation before the agency’s administrative law judge only the amount of the civil penalty. DuPont noted in a Securities and Exchange Commission filing that it was reserving USD15m for the possible civil penalty. DuPont from the outset of this case has taken a very conciliatory posture as to the EPA’s investigation under the Toxic Substances Control Act (TSCA), pledging complete cooperation on the research front and indeed seeking EPA regulation of this previously unregulated product.”*

Ahmed at HSBC (2006)

The following quote regarding Mann deals with how its industry peers are launching global truck platforms to keep up with increasingly stringent emissions standards around the world to achieve economies of scale, which will push midsize players like MAN into mergers and acquisitions (Hagmann *et al.*, 2003):

*“Historically, truck products have been different by region but, due to the harmonisation of emission standards and the potential cost savings, DCX and Volvo are now aiming to launch one global truck platform in 2005-07E. If successful, we believe the large economies of scale in DCX and Volvo will increase the pressure on the medium-sized players like MAN and push companies into M&A.”*

Hagmann, Fagerlund and Edmunds at UBS (2003)

## **14 The Relation between Financial and Environmental Performances using G.E.S. Data**

### **14.1 Background**

Several scientific publications both at national and international level assess the relationship between a company's environmental management and its stock value. This is an analysis on how sensitive a company or an industry is to environmental and social aspects that may affect the future market shares and revenues. These aspects may impact the company via stakeholder perspectives on what is ethical and acceptable or merely by the scarcities of vital resources.

There are, in general, two research findings where the first one supports the fact that a company that can effectively control pollution might also be able to effectively control other costs of production and hence earn a higher rate of return. The other results highlight the fact that environmental regulations at least in polluting industries affect negatively the company's productivity, increase the operating uncertainty and required rate of return for companies.

On the other hand the Porter and van der Linde hypothesis emphasizes that the cost involved in complying with the rules can be minimised, and even eliminated, through innovation, which in turn may generate other competitive advantages (Porter and van der Linde, 1995a; 1995b).

The objective of this study is to analyse whether environmental performance (including both compliance with policy instruments e.g. regulations and taxes as well as the industry or company environmental policies) correlates with financial performance or not. The findings would give insights on the importance of a company's environmental management and the consequences on financial outcomes. Furthermore, following Hassel et al (2008) this study also analyses the type of industry determining environmental profiles of the companies with resulting financial consequences for operating performance and market values using a sample of multinational companies from low and high risk industries.

### **14.2 The data**

#### **14.2.1 Finance data**

The finance data used in this study is based on the MSCI (Morgan Stanley Capital International) World. The MSCI World is a stock market index of 'world' stocks. It is maintained by MSCI Inc. formerly Morgan Stanley Capital International. The index includes a collection of stocks of all the developed markets in the world, as defined by MSCI. The index includes securities from 23 countries, and has been calculated since 1969. The index is calculated without dividends, with net or with gross dividends reinvested, in both US dollars and local currencies. It is a common benchmark for 'world' or 'global' stock funds.<sup>18</sup>

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<sup>18</sup> [http://en.wikipedia.org/wiki/MSCI\\_World](http://en.wikipedia.org/wiki/MSCI_World)

## 14.2.2 Environmental data

The environmental data is from the Global Ethical Standard (GES) Investment Services Risk Rating. GES rates approximately the 1000 largest firms in the MSCI World Index. The strength of the GES Investment Services database is that it provides evaluations of both environmental risk and opportunity of the MSCI World Index companies.<sup>19</sup> The GES data is qualitative and it is converted to numerical values to be used in the analysis. Table 15 shows how numerical values are converted to numerical ones. The converting corresponds to the one used by Hassel et al. (2008) in order to ease comparisons of the results. The scales for environmental risk are the reverse of the environmental opportunities i.e. a low environmental risk corresponds to high environmental opportunities such as environmental preparedness and environmental performance. The table also distinguishes between general and specific environmental risk where the first one is associated with the firm's industry and the second one is related to a company.

Table 15 GES Investment Services Risk and Opportunity Rating Scales

Environmental risk			Environmental opportunity		
General	Specific	Scaled*	Preparedness	Performance	Scaled
A	A	0	a	a	6
A-	a-	1	a-	a-	5
B+	b+	2	b+	b+	4
B	b	3	b	b	3
B-	b-	4	b-	b-	2
C+	c+	5	c+	c+	1
C	c	6	c	c	0

\*) Converted letters to numbers

According to GES Investment services, the specific environmental risk rating is derived through analysis of the company along more than 60 dimensions based on international standards for environmental management and industry-specific key indicators for environmental performance, among other things. Information sources used in the analysis process include official company documents, dialogue with companies, non-governmental organizations, the media and GES partners in the SiRi Group.<sup>20</sup>

Ratings are based on information obtained from companies in their official documents including annual and interim reports, and through a direct dialogue in the form of surveys or site visits.<sup>21</sup> Evaluation also uses public information by non-governmental organisations, the media and the international network of analysts SiRi Company Ltd. The GES rating includes about 1,800 of the largest listed companies in the world and the ratings are issued two times a year, in June and December.

The data used in this study includes 62 branches where the numbers of companies in each branch vary between 5 and 21 multinational companies. For instance the branch for Electrical Equipment (e.g. ABB) includes 20 companies, Chemicals (e.g. Akzo Nobel) 42 companies while Paper and Forest Products (e.g. SCA) have 18 firms. The data ranges from 2003 to 2007. The characteristic of the sample are shown in table 16 below. The sample includes both industries with low as well as high environmental risk. Banks and insurance activities belong to low risk industries while chemicals are high polluting industries.

<sup>19</sup> Hassel et al (2008)

<sup>20</sup> www.ges-invest.com and private communication with GES representatives

<sup>21</sup> Hassel et al (2008)

For the variable industry risk for instance, the number of observation is 9464 where the mean risk in the whole sample is 2.89 with a standard deviation of 2.25 and a minimum and a maximum ranging from 0 to 6. Based on the conversion of the rating table presented above, one may say that in average the sample is dominated by firms with not very high environmental risk i.e. 2.89. However, whilst environmental risk is not very high environmental performance is in average much lower. This brings to light the fact that the average company does not manage the environment very well. on the other hand the share of exports represented here by the variable % foreign sales is quite high in this sample being in average 38%.

Table 16: Characteristic of the sample

Variable	Obs	Mean	Std. Dev	Min	Max
ROA	9460	0.06	0.07	-0.89	0.87
Industry risk	9464	2.89	2.25	0	6
Environmental performance	9464	1.540046	1.775014	0	6
Environmental preparedness	9464	2.49	2.216583	0	6
Total debt	9414	225632	1390837	0	3.42e+07
%Foreign sales	7682	37.68	30.32076	0	452.2557
Total assets	9460	911486.1	6569526	176.94	1.86e+08
Net income	9461	13668.78	73356.27	-1663964	1644032

## 14.3 The Model

The starting point of the analysis in this study is the following postulation:

*Whilst a company strives to maximize return on assets they are indebted to reduce costs subject to production targets. This goal may be reached by strategically and optimally integrating financial and environmental management.*

In other words, maximizing ROA is subject to cost minimization while complying with environment regulations. While enterprise asset management can yield significant savings and improve the operational performance of asset investments, reducing costs subject to production targets may imply that the financial levels are high based on depreciation, maintenance and upgrade to fixed assets. Experts estimate, for instance that maintenance costs can represent 20% to 40% of operating costs.<sup>22</sup> Furthermore, compliance with regulatory requirements being a prerequisite for positive future financial performance may be costly at the company level. On the other hand, the last 25 years in the USA, and more recently at the international level, has seen environmental management for the firm become more than just compliance with existing regulations<sup>23</sup>. Although compliance with environmental regulations (e.g. taxes) is compulsory some companies, in the sake of larger market shares, have been freely adapting other environmental regulations exceeding the compulsory ones.

Based on this discussion and assuming an optimal management of depreciation, maintenance and upgrade to fixed assets, the following functional form is analysed:

**ROA = f [(env.risk), (env.preparedness), (env.performance), other covariates]**

That is return on assets is a function of environmental risk (industry and company), environmental preparedness and environmental performance.

<sup>22</sup> [www.sap.com/contactsap](http://www.sap.com/contactsap)

<sup>23</sup> Sharon A Jones (2002).

Given the existence of a variety of estimation techniques and given the data observations the purpose in this study is to investigate the relationship between ROA and the other dependent variables.

The static model for estimations is defined as

$$ROA_{it} = c + \alpha R_{it} + \beta E_{it} + \delta C_{it} + \varepsilon_{it}, \quad i = 1, \dots, N., \quad t = 1, \dots, T.$$

Where  $ROA$  is return on assets,  $R$  is environmental risk (industry or company) and  $E$  is environment performance and/or environmental preparedness or an average of these.  $C$  is a control variable and  $i$  specifies the  $i$ th firm and  $t$  denotes the  $t$ th time period.  $\varepsilon$  is the residual.

We have chosen one financial performance accounting-based measure  $ROA$  to serve as our dependent variable. The choice of operating performance measures  $ROA$  reflects the objective to find broad measures which addresses profitability and efficiency (Guenster *et al* 2005). Russo and Fouts (1997) as well as Hassel *et al* (2008) focus on the relation between industry environmental performance and company environmental performance, and use  $ROA$  as the dependent variable.

Since maximizing  $ROA$  is a dynamic process, it depends on specific characteristic of the company and takes time to adjust. The static model would not generally capture total adjustment. Given that the main interest in this study is in the adjustment process the dynamic models is used to capture the temporal aspects of adaptation. If for instance environmental performance and/or preparedness change in a given year but some companies react in a later year, then today's  $ROA$  is not only a function of today's environment performance-preparedness but of earlier performance-preparedness.

There have been various strategies for modeling this dynamic dependence. An early, but widely used representation of dynamic behavior is the partial adjustment model. It assumes that there is inertia in adaptation which leads to the inclusion of a lagged  $ROA$  variable,

$$ROA_t = sc + s\alpha R_t + s\beta E_t + s\delta C_t + (1-s)ROA_{t-1} + \mu_t, \quad \text{where } \mu_t = s\varepsilon_{t1} + \varepsilon_{t2}$$

This formulation referred to as the lagged endogenous model. Short run elasticities are coefficients ( $\alpha$ ,  $\beta$ ) and the long run elasticity is given by coefficients divided by  $s$ , where  $s$  is the adaptation fraction. Normally,  $s$  is assumed to take values between 1 and 0, where 0 implies no adjustment and 1 suggests instantaneous adaptation (which is the same as the static model). It can easily be shown (through the Koyck transformation) that this model is equivalent to a geometrically declining lag structure which might appear as an overly restrictive assumption, but does have some intuitive appeal.

In order to assess if there are differences pertaining to the varying sub-samples of data the results for the regressions run on the following sub-samples:

- The entire dataset as well as low risk industries and high risk ones
- The branches electrical equipments, chemicals and paper and forest products, aggregated
- Each of the branches electrical equipments, chemicals and paper and forest products
- The 3 firms ABB, Akzo Nobel and SCA

The reason for this is to detailed analysis is to compare the results using the different sub-sample and especially to the three branches as well as the 3 firms.

## 14.4 Results

Based on limited time series data for most of the included international companies the analysis of this study is for the most part based on small T, large n. This implies that the use of dynamic models is quite limited except in the case of the sub-sample dealing with the 3 companies ABB, Akzo Nobel and SCA.

In the regression analysis the control variables include debt/assets such as in Hassel and Semenova (2008) as well as foreign sales as percentage of total sales. The correlation between the used variables is shown in table 17 below. The correlations are among the six independent variables. The lower triangular structure of this correlation "matrix" is typical of correlation tables since the correlation of variable **a** with variable **b** is the same as the correlation of variable **b** with variable **a**. The correlation of a variable with itself is obviously 1.0.

Table 17: Correlation of the model's variables.

	<b>Industry risk</b>	<b>Preparedness</b>	<b>Performance</b>	<b>Total assets</b>	<b>Total debt</b>	<b>Foreign sales as %</b>
Industry risk	<b>1</b>					
Env. Preparedness	0.48	<b>1</b>				
Env. Performance	0.33	0.75	<b>1</b>			
Total assets	-0.05	-0.016	-0.03	<b>1</b>		
Total debt	0.06	-0.03	-0.04	0.91	<b>1</b>	
Foreign sales as %	0.03	0.005	0.008	-0.04	-0.05	<b>1</b>

As shown in the table the correlation coefficient for environmental preparedness and environmental performance with environmental risk is positive but not very high in the sample being 0.48 and 0.33, respectively. On the other hand, foreign sales as % of total sales are not correlated with industry environmental risk.

Since the sample contains a mixture of branches including those which have an environmentally intensive production and those with less environmentally intensive one table 18 shown that company risk defined here as an average of a company's environmental performance and preparedness have a significant and negative impact on the financial performance i.e. return on assets.

Table 18: Regression results for all companies.

	<b>Return on assets</b>			
Industry risk	-0.003 (0.85)*			
Company risk		-0.004 (3.66)		
Performance			-0.001 (3.37)	
Preparedness				-0.001 (3.48)
Constant	0.08 (42.10)	0.08 (44.29)	0.08 (45.39)	0.08 (43.96)
Debt/assets	-0.11 (27.21)	-0.11 (27.34)	-0.11 (27.33)	-0.11 (27.31)
% Foreign sales	0.0002 (10.24)	0.0002 (10.23)	0.0002 (10.23)	0.0002 (10.22)
Adj R <sup>2</sup>	0.11	0.11	0.11	0.11
No. of obs	7582	7682	7682	7682

\*) t-test

For the control variable total debt/total assets this has a significant and negative effect on return on assets. Furthermore, high foreign sales correlate positively with financial performance.

In high risk or polluting industries, environmental management including investments in clean technology may be costly and would imply decreases in the financial performance of companies. Table 19 confirms this hypothesis showing the high negative correlation between the industry environmental risk and ROA.

Table 19: Regression results for low risk and high risk companies.

Return on assets		
	Low risk $\leq 1$	High risk $\geq 5$
Industry risk	0.006 (2.90)	-0.009 (3.27)
<i>Control variables</i>		
Debt/assets	-0.11 (16.48)	-0.12 (15.05)
% Foreign sales	0.0002 (6.55)	0.0003 (6.58)
Adj R <sup>2</sup>	0.11	0.12
No. of obs	3038	2389

For the low environmental risk industries the estimated coefficient is positive and significant. This result as well as the one related to high industry risk corresponds to the finding of Hassel et al (2008) for the American industries.

When it comes to the other variables i.e. company risk as well as environmental performance and preparedness, which are not shown in the table, there parameter estimates are not significant for the two groups of industries.

Looking at the branches this sub-sample contains sectors which have an environmentally intensive production. It includes electrical equipments, chemicals and paper and forest products. Table 20 depicts the results. As shown all environmental variables except environmental performance are negative and highly correlated to ROA. These results are in line with the finding for the high polluting companies discussed above.

Table 20 Regression results for the combined three industries.

Return on assets				
Env. Industry risk	-0.019 (2.21)			
Env. Company risk		-0.05 (2.05)		
Env. Performance			-0.001 (0.57)	
Env. Preparedness				-0.006 (3.05)
Constant	1.71 (3.49)	0.83 (6.67)	0.06 (6.56)	0.09 (7.21)
<i>Control variables</i>				
Debt/assets	-0.05 (2.77)	-0.05 (3.21)	-0.05 (3.08)	-0.05 (3.33)
%Foreign sales	0.0002 (1.74)*	0.0002 (1.84)**	0.0002 (1.91)**	0.0002 (1.73)**
Adj R <sup>2</sup>	0.05	0.05	0.05	0.06
No. of obs	441	441	441	441

\*) significant at 10% level; \*\*) significant at 5% level



For the control variables total debt/total assets its coefficient is negative and highly correlated with ROA. Further, % foreign sales is positive and significant at 5% level with regard to ROA.

Except the results based on the aggregated data for the 3 industries, there may be a difference between each of these. Table 21 shows the results.

An ambition in the regression analysis was to estimate elasticities that are easy to comment. This is done in general by using the variables in logarithmic form. However, the nature of the data where the number of zeros is quite large limited this ambition since the use of logarithm would reduce the number of observations. Nevertheless, in order to assess the difference between the 3 different branches- environmental performance on ROA the elasticities different elasticities are estimated.

To start with, most of the estimated elasticities related to environmental issues are not significant (not shown here). However, some coefficients are not. In the case of the branch electric equipment, an increase in environmental performance by one percent would lead to an increase in ROA by 0.69 percent. When it comes to chemicals an increase in company risk by one percent would increase ROA by 0.21 percent. In the case of paper and forest products, and increase in environmental preparedness by one percent would leads to a decrease in ROA by 1.19 percent.

Table 21: Elasticities in the case of each of the three industries

	<b>Electrical Components</b>	<b>Chemicals</b>	<b>Paper &amp; Forest Products</b>
	Env. Performance	Company Risk	Env. Prepared.
	0.69	0.21	-1.19
	(2.53)	(1.50)*	(2.68)
Constant	-5.59	-3.04	-6.21
	(4.63)	(13.15)	(6.98)
	<i>Control variables</i>		
Debt/assets	-0.36	0.04	-0.34
	(2.83)	(0.58)	(1.90)
Foreign sales as	0.27	-0.04	0.74
%	(1.11)	(1.13)	(4.08)
Adj R <sup>2</sup>	0.22	0.01	0.42
No. of obs	45	220	52

\*) significant at 10% level; \*\*) significant at 5% level

As discussed above there is a difference between a static and a dynamic model in the sense these last ones capture the adjustment process. However, the short time dimension of the sample and especially for most of the companies any effect of environmental performance would not have enough time to capture the adjustment. However, in the case of the 3 firms both static and dynamic models, see figure 22 below, are used to estimate the relationship between environmental performance and the financial one and to show the difference between them.

Table 22: Regression analysis of the three firms

Return on assets						
	Static model				Dynamic model	
					Short run	Long run
Env. Industry risk	-0.04 (2.05)					
Env. Company risk		0.02 (1.50)**				
Env. Performance			0.008 (1.17)		0.01 (1.70)*	0.02
Env. Preparedness				0.02 (1.38)		
Constant	0.31 (2.34)	-0.03 (0.58)	0.02 (0.91)	-0.12 (1.01)	0.009 (0.41)	
<i>Control variables</i>						
Debt/assets	-0.12 (1.55)	-0.17 (1.85)	-0.18 (1.17)	-0.06 (0.70)	-0.18 (2.15)	-0.35
Foreign sales as %	0.0003 (1.27)	0.0009 (3.90)	0.0008 (3.72)	0.0009 (3.94)	0.0004 (2.33)	0.0007
Adj R <sup>2</sup>	0.41	0.36	0.34	0.36	0.67	
No. of obs	27	27	27	27	26	

\*) significant at 10% level

\*\*) significant at 5% level

In the static model environmental risk at the industry level has negative impacts on ROA. In the dynamic model this correlation is not significant. Using a dynamic model environmental performance is positive and significant at 5 % level. Although environmental performance is less significant in the short run, this variable has significant effect on ROA both in the short and long run.

## 14.5 The Relation between Financial and Environmental Performances using Asset4 data

In addition to GES data access to Asset4 data, although limited and ranges from 2003 to 2007, enables regression analyses only for the 3 firms ABB, Akzo Nobel and SCA. The objective of this regression analysis is twofold:

- to compare the results to the ones based on GES data
- to assess whether these companies-environmental performance- being in average more eco-efficient than the benchmark- (as discussed above) contribute positively to ROA.

Table 23: Regression results using Asset4 data

Return on assets	
Env. Performance	-0.43 (2.17)
Constant	-4.40 (2.94)
<i>Control variables</i>	
Debt/assets	9.05 (1.31))
Foreign sales as %	0.02 (1.61)
Adj R <sup>2</sup>	0.56
No. of obs	13

Table 23 shows the results. Since the data is not related directly to the companies environmental performance is not clear how to comment the results. Furthermore, the limited number of observation contributes further to the consistency of the results. However, compared to the GES data the results are in line with the findings for companies with high environmental risk.

## 15 Conclusion

Traditionally, external assessment of companies' environmental performance is seldom dealt with, but focusing on the existence of strategies, commitments, management systems and reporting of firms that concerns environmental aspects. The environmental performance analysed foremost concerns substance flows and in some cases the resulting environmental cost assessment relating to the judicial borders of the firm which in most industry sectors is not going to be influencing major firm decisions, especially if these costs are to illustrate the *true* costs for society and not the costs that may face the firm. Instead, in line with extra financial analysis, in order to play an role in decision-making, analysis of environmental aspects should incorporate the influence that stakeholders – such as customers, NGO's and legislators – may have on future revenues of the assessed firm in the near by future and how well advanced corporate strategies are in meeting these threats or changes in the business environment that incorporates the environmental constraints put on their customers by legislators and increased global competition for resources – through research and market plans – to turn them into business opportunities.

One obstacle for making assessments of firms – strict financial or environmental – from the outside and in is the information asymmetries and the lack of data as well as a picture over the linkage between environmental aspects and financial outcomes. This research report, hence, deals with the concept of extra financial analysis and, then, investigates what environmental information financial analysts use in their financial analyst reports as well as the relation between environmental and financial performance. Three industry sectors, *Chemicals*, *Electrical Equipment* and *Paper & Forest Products*, are specially analysed in this report.

Unlike most previous research that merely looks at the perceptions of analysts, the assessment of environmental information in financial analyst reports, examines the environmental information financial analysts actually use in their analyst reports which then influence the investment behaviour of investors. Out of almost 4500 analyst reports about 36 percent contain environmental information, but when looking at industry sectors these numbers range from only 3 to up to 79 percent. The type of environmental information that the analysts focus on in their reports are on how firms' products and product portfolios are adopted to *Environmental regulations facing customers/markets*, *Customer demands* and *Eco-Efficiency*. This product perspective is strongly related to discussions of business opportunities of the firm. In fact, a good 77 % of the financial analyst reports containing environmental information dealt with opportunities linked to environmental aspects. To a lower extent, financial analysts write about company specific risk issues like emissions and litigations while their reports is virtually absent from aspects like environmental strategies, policies, management systems, reporting and auditing which constitute a prominent part in many assessments used by environmentally concerned investors.

Whilst environmental management, furthermore, is a prerequisite to simultaneously optimise the use of environmental resources and to reduce production costs, the performance at the industry as well as at the firm levels is environmental performance dependant. The correlation between corporate financial and environmental performances are illuminated through regression analyses and although environmental performance is compliance, voluntary and or driven by the impacts on the financial outcomes of the industry or firm may be different depending on these entities'

environmental risk, environmental preparedness and performance both at the short and long term. Industry environmental risk is found to be negatively correlated to corporate return on assets – ROA – (in an static model) while (when applying a dynamic model) corporate environmental performance and ROA have a positive correlation in the short term, which can find support by other studies using different data.

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## **Appendix I: CPM Extra Financial Analysis Workshop, May 7th-8th, 2007, Chalmers University of Technology, Gothenburg**

### **Extra Financial Analysis – EFA:**

#### ***Picturing the business opportunities and risks associated to stakeholder perceptions and environmental and social prerequisites***

CPM is a Swedish national Competence Centre at Chalmers University of Technology in collaboration with a network of firms and the IVL Swedish Environmental Research Institute. The objective of CPM is to contribute to knowledge and tools that lead the way towards sustainable development in business, product and process development and marketing communication.

The CPM Extra Financial Analysis Workshop is the first workshop of the two-year project Extra Financial Analysis, EFA, on how to adopt analysis methods from the financial sector into corporate management of extra financial risks and opportunities as well as in how to permeate information on how environmental and social issues may affect the reporting company's financial outcomes to the analysts. The EFA project is one of CPM's four current research projects.

The workshop will be attended representatives from the organisations constituting CPM; Chalmers University of Technology, ABB, Akzo Nobel, IKEA, IVL Swedish Environmental Research Institute SCA and Schenker; as well as representatives from Umeå Business School and the Business School at Åbo Akademi University, Finland. A selected few international corporations may also be invited.

Day 1 of the workshop is open for the larger audience while Day 2 of the workshop is an internal workshop for the CPM network organisations (with an option for the presenters to participate).

CPM gladly welcomes you the workshop on Extra Financial Analyses at Chalmers University of Technology in Gothenburg May 7-8<sup>th</sup>. Please, do notify us your presence and any special food requirements no later than April 26<sup>th</sup> to the Workshop Moderator Pontus Cerin, [pontus.cerin@ivl.se](mailto:pontus.cerin@ivl.se).

### **Day 1 – May 7<sup>th</sup>, 2007**

9.30 – 10.00      **Coffee & Mingling**

10.00 – 10.15      **Opening of workshop**

Peter Lysell, Gothenburg  
*Manager of CPM*  
Chalmers University of Technology  
Gothenburg

10.15 – 10.30      **Outlining the Extra Financial Analysis (EFA) two-year Project**

Mohammed Belhaj and Pontus Cerin  
*Assistant Professors*  
IVL Swedish Environmental Research Institute  
Gothenburg and Stockholm

10.30 – 11.00      **Sustainable Investment Research Platform – Research with Practical Benefits**

Lars Hassel  
*Öhrlings PricewaterhouseCoopers Professor, Head of Sustainable Investment Research*  
Umeå School of Business  
Umeå

11.00 – 11.30 **Coffee Break**

11.30 – 12.00 **Sell-Side Analysts use of Environmental Information and the “analysts’ mindset”**  
Henrik Nilsson  
*Assistant Professor*  
Umeå School of Business  
Umeå

12.00 – 12.30 **Communicating CSR to the Financial Community**  
Lars-Olle Larsson  
*Principal Director, Assurance Services*  
Öhrlings PricewaterhouseCoopers  
Malmö

12.30 – 13.30 **Lunch**

13.30 – 14.00 **The implications of UN Principles for Responsible Investments**  
Erik Alhøj  
*Managing Director*  
GES Investment Services  
Copenhagen

14.00 – 14.30 **Focus on Value: Research Methodology of SAM Indices and funds**  
Clas-Henrik Ivarsson  
*Nordic Representative*  
SAM Group  
Stockholm

14.30 – 15.00 **Coffee Break**

15.00 – 15.30 **Sustainability Analysis – In Search of Risks and Opportunities (with examples)**  
Fredrik Wilkens  
*Head of Institutional Sales Nordic Countries*  
Dexia Asset Management  
Stockholm

15.30 – 15.50 **Uncovering Hidden Value in Research, Ratings and Services**  
Marc Brammer  
*Director of Research, Europe*  
Innovest Strategic Value Advisors  
London

15.50 – 16.10 **Analysing Industry Sectors and their Companies**  
Susanna Jacobson  
*Senior Analyst*  
Innovest Strategic Value Advisors  
London

16.10 – 16.40 **Group discussions with Coffee**  
*Capturing the long-term value:  
Implications for*

- A) *strategic management,*
- B) *communication and*
- C) *analysis*

Mixed groups with representatives from industry, finance and academia

16.40 – 17.00    **Presentation of Results**

17.00    **Closing Workshop Day 1**

19.00    **Dinner**

## **Day 2 – May 8<sup>th</sup>, 2007** (Internal workshop for the CPM network organisations)

9.00 – 9.30    **Coffee & Mingling**

9.30 – 10.00    **Summing up experiences from Day 1**

Pontus Cerin

*Assistant Professor*

Umeå School of Business and IVL Swedish Environmental Research Institute  
Stockholm

10.00 – 10.30    **Introducing External Costs in Goods Transport Systems**

Magnus Blinge

*Assistant Professor*

Chalmers University of Technology and IVL Swedish Environmental Research Institute  
Gothenburg

10.30 – 11.30    **Designing Project Parameters and work packages**

Mohammed Belhaj

*PhD*

IVL Swedish Environmental Research Institute  
Gothenburg

12.00-12.30    **Discussion: Collaboration between CPM and Åbo Akademi University**

Bengt Steen

*Professor, Co-manager of CPM*

Chalmers University of Technology  
Gothenburg

11.30 – 12.00    **Deliverables and communication of project actors**

12.30 – 13.30    **Lunch**

13.00    **Closing Workshop Day 2**

## Participants

This is the list of registered participants containing following personal information: name, affiliation and email address as well as what parts of the workshop that is intended to participate in. If the list is not correct regarding what events to participate, please, do contact Peter Lysell, Chalmers University of Technology, Mohammed Belhaj, IVL, or Pontus Cerin, IVL Swedish Environmental Research Institute during the coffee break before noon (Day 1) for corrections.

Name	Affiliation and email address	Participating during:		
		Day one	Dinner	Day two
Erik Alhøj	G.E.S. Investment Services <a href="mailto:era@ges-invest.dk">era@ges-invest.dk</a>	✓	✓	
Mohammed Belhaj	IVL Swedish Environmental Research Institute <a href="mailto:mohammed.belhaj@ivl.se">mohammed.belhaj@ivl.se</a>	✓	✓	✓
Eva Bingel	IVL Swedish Environmental Research Institute <a href="mailto:Eva.bingel@ivl.se">Eva.bingel@ivl.se</a>	✓		
Magnus Blinge	Chalmers University of Technology <a href="mailto:magnus.blinge@chalmers.se">magnus.blinge@chalmers.se</a>			✓
Marc Brammer	Innovest Strategic Value Advisors <a href="mailto:mbrammer@innovestgroup.com">mbrammer@innovestgroup.com</a>	✓	✓	
Raul Carlsson	Chalmers University of Technology <a href="mailto:raul.carlson@imi.chalmers.se">raul.carlson@imi.chalmers.se</a>	✓	✓	✓
Pontus Cerin	IVL Swedish Environmental Research Institute <a href="mailto:pontus.cerin@ivl.se">pontus.cerin@ivl.se</a>	✓	✓	✓
Lisbeth Dahllof	Volvo <a href="mailto:lisbeth.dahllof@volvo.com">lisbeth.dahllof@volvo.com</a>	✓		
Elin Eriksson	IVL Swedish Environmental Research Institute <a href="mailto:elin.eriksson@ivl.se">elin.eriksson@ivl.se</a>	✓	✓	✓
Maria Erixon	Chalmers University of Technology <a href="mailto:maria.erixon@imi.chalmers.se">maria.erixon@imi.chalmers.se</a>	✓	✓	✓
Ulf Forsman	Åbo Akademi University <a href="mailto:ulf.forsman@3angle.fi">ulf.forsman@3angle.fi</a>	✓	✓	✓
Birgitta Forsström	Åbo Akademi University <a href="mailto:birgitta.forsstrom@sydvast.fi">birgitta.forsstrom@sydvast.fi</a>	✓	✓	
Bo Forsström	Åbo Akademi University <a href="mailto:bo.forsstrom@abo.fi">bo.forsstrom@abo.fi</a>	✓	✓	✓
Klas Hallberg	Akzo Nobel <a href="mailto:klas.hallberg@sc.akzonobel.com">klas.hallberg@sc.akzonobel.com</a>	✓	✓	✓
Lars Hassel	Umeå School of Business <a href="mailto:lars.hassel@usbe.umu.se">lars.hassel@usbe.umu.se</a>	✓	✓	✓

Curt Henricson	ABB <a href="mailto:curt.henricson@se.abb.com">curt.henricson@se.abb.com</a>	✓		
Susan Iliefski-Janols	SCA <a href="mailto:susan.iliefski-janols@sca.com">susan.iliefski-janols@sca.com</a>	✓		
Patrik Isaksson	SCA <a href="mailto:patrik.isaksson@sca.com">patrik.isaksson@sca.com</a>	✓		
Clas-Henrik Ivarsson	SAM Group <a href="mailto:clas-henrik.ivarsson@sam-group.com">clas-henrik.ivarsson@sam-group.com</a>	✓		
Susanna Jacobson	Innovest Strategic Value Advisors <a href="mailto:sjacobson@innovestgroup.com">sjacobson@innovestgroup.com</a>	✓	✓	
Malin Roux Johansson	Butterfly <a href="mailto:malin@butterfly.se">malin@butterfly.se</a>	✓		
Helena Kästel	Butterfly <a href="mailto:helena@butterfly.se">helena@butterfly.se</a>	✓		
Lars-Olle Larsson	Öhrlings PricewaterhouseCoopers <a href="mailto:lars-olle.larsson@se.pwc.com">lars-olle.larsson@se.pwc.com</a>	✓	✓	
Lars-Gunnar Lindfors	IVL Swedish Environmental Research Institute <a href="mailto:lars-hassel@ivl.se">lars-hassel@ivl.se</a>	✓		
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Peter Lysell	Chalmers University of Technology <a href="mailto:peter.lysell@cpm.chalmers">peter.lysell@cpm.chalmers</a>	✓	✓	✓
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Ellen Riise	SCA <a href="mailto:ellen.riise@sca.com">ellen.riise@sca.com</a>	✓	✓	✓
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Lennart Swanström	ABB <a href="mailto:lennart.swanstrom@se.abb.com">lennart.swanstrom@se.abb.com</a>	✓	✓	✓
Fredrik Wilkens	Dexia Asset Management <a href="mailto:fredrik.wilkens@dexia-am.com">fredrik.wilkens@dexia-am.com</a>	✓		

## Appendix II: Cormier and Magnan (2003) Environmental Reporting Ratings

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### Environmental expenditures and risks:

- Pollution control equipment and facilities
  - Past and current expenditures
  - Future estimates of expenditures
  - Future estimates of operating costs
  - Financing
- Environmental debt
- Risk provision
- Provision for charge

### Land remediation and contamination:

- Sites
  - Efforts of remediation (present and future)
  - Cost/potential liability (provisions for site remediation)
- Spills:
  - Number
  - Nature
  - Efforts to reduce
- Liabilities (actual and potential)

### Laws and regulations:

- Litigation (present and potential)
- Fines
- Orders to conform
- Corrective actions
- Incidents
- Future legislation or regulation requirements

### Sustainable development reporting:

- Conservation of natural resources
- Recycling
- Life cycle information

### Environmental management:

- Environmental policies or company concern for the environment
- Environmental management system

### Pollution abatement:

- Air emission information
- Water discharge information
- Solid waste disposal information
- Control, installations, facilities or processes described
- Compliance status of facilities
- Noise and odours

### Environmental auditing

- Goals and targets
- Awards
- Department or office for pollution control
- ISO 14000
- Participation in elaboration of environmental standards
- Joint projects with other firms on environmental management

### Rating scale:

- 3, item described in monetary or quantitative terms;
- 2, item described specifically;
- 1, item discussed in general.



## Appendix III: Number of analyst reports per bank containing environmental information

<b>Investment bank</b>	<b>Number of analyst reports on the <i>Chemistry, Electrical Equipment and Paper &amp; Forest Products</i> industries that contains environmental information</b>
A.G. Edwards	1
ABN AMRO	18
Auerbach Grayson	2
Baird	1
Bank Degroof	1
Bank Sarasin & Co.	1
BASF	1
BB&T Capital Markets	4
Bear Stearns	10
Berenberg Bank	1
Bernstein Research Call	1
BNP Paribas	5
Cannacord Capital Corporation	1
Carnegie Securities	3
CIBC World Markets	6
Citigroup	35
Clarion Securities	1
Commerzbank Securities	7
Credit Lyonnais Securities Europe	3
Credit Suisse	33
Credit Suisse First Boston	3
DAEWO Securities	1
Danske Securities	2
Delta Lloyd Securities	1
Deutsche Bank	46
Deutsche Bank Alex. Brown	2
Donaldson, Lufkin&Jenrette	1
DZ Bank AG	1
Evolution Beeson Gregory	1
Fulcrum Global Partners	10
Good Morning Securities	1
Handelasbanken Securities	5
Helvea	2
HSBC	12
Hyundai Securities	2
IBISWorld	1
ING	10
ING Barings	2

Ing Financial Markets	9
Investorsagent	1
IXIS Securities	1
Janney Montgomery Scott	1
Jefferies & Company Inc.	5
Julius Bär	2
Kaupthing	1
Kempen & Company	1
Kepler Equities	2
Key Bank Capital Markets	1
McDonald Investments	2
Metzler Equity Research	7
Nomura	4
Oppenheim	1
PaineWebber	1
Paribas	1
PETERCAM	2
Pictet	1
Pittsburg Research Inc.	1
Price Target Research	1
Prudential Equity Group	5
Rabobank	1
RBC Capital Markets	2
RBC Dominion Securities	1
Salomon Smith Barney	8
Samsung Securities	1
Santander Central Hispano	1
Schroder Salomon Smith Barney	5
Schroders	3
SG	4
SG Equity Research	2
Smith Barney Citigroup	3
SmithBarney	1
Societe Generale	4
Teather & Greenwood Limited	1
The Buckingham Research Group	6
UBS	12
UBS Global Research	1
UBS Warburg	15
ValuEngine	1
Warburg Dillon Read	3
West LB	2
Vontobel	1
Woori Investment & Securities	1